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980N-1
Altimeter Test Set

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Figure 1-1. 980N-1 Altimeter Test Set

section 1
general description

1.1 PURPOSE OF INSTRUCTION BOOK

This instruction book provides information necessary to install, operate, and maintain the 980N-1 Altimeter Test Set.

1.2 PURPOSE OF EQUIPMENT

The 980N-1 Altimeter Test Set is used primarily to isolate faults in the AL-101 Radio Altimeter System and to perform routine flight-line maintenance tests on the system while it is installed in the aircraft. It also has limited capabilities for operationally bench testing the 860F-1 Radio Altimeter and 339H-1( ) Radio Altitude Indicator.

1.3 EQUIPMENT DESCRIPTION

The 980N-1 Altimeter Test Set is a portable, unpressurized unit enclosed in a 2-piece, drawn-aluminum case. The top cover is hinged and detachable. The operating controls and indicators are mounted on the front panel, which is attached to the bottom section by 6 screws. A cable assembly, terminated in a mating connector, provides connections to the 980N-1 from the 860F-1 front panel connector, J9. Provisions for mounting the 339H-1( ) indicator on the front panel include the mating connector and all necessary inputs. A plate covers the recess when the indicator is removed. A swing-out light is mounted to the front panel (not shown on figures 1-1 and 4-1).

1.4 EQUIPMENT SPECIFICATIONS

1.4.1 Physical and Mechanical Characteristics

Size..... 9-1/2 inches high, 11 inches wide, 8 inches deep.

Weight..... 11 pounds (not including 339H-1( ) indicator).

Construction..... Refer to paragraph 1.3.

Finish..... Exterior is gray, textured epoxy. Instrument panel is gray enamel.

1.4.2 Service Conditions

Ambient temperature range, operating..... -29 to +49 °C (-20 to +120 °F).

Ambient temperature range, storage..... -45 to +71 °C (-50 to +160 °F).

Ambient humidity range..... Up to 48 hours exposure to 0 to 95 percent humidity at 50 °C (122 °F).

Shock conditions..... 3 shocks at 15 g and 1 shock at 25 g (shock duration: 11 ± 1 milliseconds).

Operating position..... Upright and reasonably level.

Service..... Continuous up to 1-hour maximum (limitation due to increased power requirements on 860F-1 power supply).

1.4.3 Electrical Characteristics

Power requirements.... All supplied through 860F-1.

Reference voltage..... +30 volts dc ± 0.1 percent, -30 volts dc ± 0.1 percent.

Flag voltage..... +27 volts dc ±10 percent.

Ac voltage..... 26 volts ac ±10 percent, 400 Hz ±5 percent.

1.4.4 Altitude Simulation

Precision Crystal Controlled Oscillator

Altitude..... 480 ±0.1 feet.

Frequencies..... For 20-foot AID, 19.885 kHz,
For 40-foot AID, 20.285 kHz,
For 57-foot AID, 20.625 kHz.

Variable Voltage Controlled Oscillator (Dial Controlled)

Frequency range..... 600 Hz to 130 kHz.

Short term stability.... ±2 percent.

Output level..... 1.5 volts rms at 600 Hz with 6-db/octave reduction above 600 Hz.

1.4.5 Altitude Measurement

Accuracy..... ±2 feet or ±2 percent, whichever is greater.

Microammeter

Accuracy..... ±2 percent of full scale deflection.

Sensitivity (For full scale deflection.)

High..... ±1.2 volts dc.

Medium..... ±6 volts dc.

Low..... ±30 volts dc.

Trip accuracy..... ±2 percent of output voltage, or ±2 feet, whichever is greater.

1.4.6 VSWR Measurement

Accuracy..... ±10 percent.

1.4.7 Strapping Options

Either +27 volts dc or ground connected to A/P warn arm or trip common terminals.

section 2
installation

2.1 UNPACKING AND EQUIPMENT INSPECTION

Remove all packing material, and carefully remove the 980N-1 Altimeter Test Set from shipping carton. Carefully inspect for possible shipping damage. If damage exists, return unit to shipping carton along with all packing material and file damage claim with transportation agency. If no damage exists, retain carton for equipment storage purposes.

2.2 CONNECTIONS

For flight-line maintenance or bench performance testing, connect the 980N-1 cable assembly to the 860F-1 front panel connector.

For 339H-1( ) testing, connect the unit to the 860F-1 front panel connector, remove the indicator recess cover, mate the connector attached to the recess cover with the 339H-1( ) rear connector, place the 339H-1( ) into the recess, and secure the unit to the 980N-1 front panel as shown in figure 4-1.

section 3
operation

3.1 GENERAL

In most AL-101 Radio Altimeter System installations, the 339H-1( ) Radio Altitude Indicator and 860F-1 Radio Altimeter are remotely located. For this reason, provisions are included for mounting the 339H-1( ) on the 980N-1 front panel as shown in figure 4-1. This eliminates the need for frequent trips between the aircraft radio rack and the cockpit control panel. It also provides a convenient means of isolating a malfunction to either the 339H-1( ) or the associated wiring. For example, if the 339H-1( ) indications do not agree with those on the 980N-1, the malfunction is known to be in the 339H-1( ); if the 339H-1( ) operates properly in the 980N-1 but does not when installed in the aircraft control panel, the malfunction is known to be in the wiring from the 860F-1 to the 339H-1( ).

There is only one strapping requirement in the 980N-1. If, in the altimeter system under test, the trip common terminal is at ground, strap the 980N-1 TB3 terminal C to J. If the trip common terminal is at +27 volts dc, strap TB3 terminal C to F. If the A/P warn arm terminal is at ground, strap the 980N-1 TB3 terminals A to G and B to H. If the A/P warn arm terminal is at +27 volts dc, strap TB3 terminals A to D and B to E.

It is also necessary to know what AID value is being used in the altimeter system under test. This value (20, 40, or 57) must be used in setting the AID/ALT SELECT switch in the 480FT range. In the test procedures that follow this paragraph, this value must be inserted at the points indicated by 480FT( ).

3.2 OPERATING INSTRUCTIONS

3.2.1 General

An abbreviated set of operating instructions are printed on the inside of the 980N-1 top cover. A similar but more detailed set is shown in table 3-1. The same instructions are included in the AL-101 Radio Altimeter System Maintenance Manual. It is recommended that the material in the principles of operation section of this manual be studied before attempting to operate the 980N-1 Altimeter Test Set. This material, together with a knowledge of the altimeter system, provides the operator with information needed to interpret the test results.

3.2.2 AL-101 Radio Altimeter System Testing and Troubleshooting Procedures

The procedures to be used to test and/or troubleshoot the AL-101 Radio Altimeter System are shown on table 3-1. The first information provided is in the form of 5 notes: (1), (2), (3) (4), and (5). These notes are referenced by number throughout the testing procedures. For example, note (1) describes the procedures to be followed to zero the meter. This note is referenced in steps 7 through 16 where it is necessary to zero the meter. Note (2) contains information on the operation of the TRIP lamp. This note is referenced in those steps where a TRIP lamp indication is required.

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set

	Notes
(1) To zero meter:	Always begin with METER SENS switch in LOW position. To measure the 860F-1 altitude output voltage, adjust the ALTITUDE control to the desired input frequency (or the desired operating point as in step 10), then adjust the ALTITUDE STANDARD to zero the meter (pointer on midscale mark) with the METER SENS switch first in LOW, then MED (for increased accuracy), then HIGH (for best accuracy). To test the system at some specific input frequency, adjust the ALTITUDE STANDARD to the desired altitude as indicated by the digital readout, then adjust the ALTITUDE control to zero the meter with the METER SENS first in LOW, then MED, and finally in HIGH position.
(2) TRIP lamp operation:	When the TRIP lamp is lit, this indicates that the trip contacts corresponding to the ALTITUDE TRIP SELECT switch position are closed. If A5CR67 has been removed from the 860F-1, the TRIP lamp will not operate in AL-101 SELF TEST regardless of the ALTITUDE TRIP SELECT switch position. Refer to the applicable section in the AL-101 Radio Altimeter Maintenance Manual for additional information.
(3) MDA lamp operation:	When the MDA lamp is lit, this indicates that a closed circuit exists between the 339H-1( ) MDA trip output terminals. An internal ground is provided in 980N-1 SELF TEST to light the lamp. For all other tests except VSWR, the MDA lamp indication is dependent on the 339H-1( ) MDA index position with respect to the pointer. (The MDA lamp is not energized in VSWR test.)
(4) A/P WARN and A/P NO WARN lamp operation:	The A/P WARN and A/P NO WARN lamps are never lit simultaneously except in 980N-1 SELF TEST. Otherwise, the A/P NO WARN lamp is lit (and the A/P WARN lamp is out) for all simulated altitudes below 2500 feet. Above 2500 feet and in AL-101 self-test, both lamp conditions are reversed. A reversed condition below 2500 feet indicates a warn condition in the 860F-1.
(5) Self-test altitudes:	The altitude indication obtained in AL-101 SELF TEST is dependent on the type of 860F-1 used in the system. Refer to figure 4A, in the AL-101 Radio Altimeter System Maintenance Manual, for specific information.

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set (Cont)

STEP	TEST TITLE, REMARKS, AND SPECIAL INSTRUCTIONS	APPLICABLE 980N-1 SWITCH OR OPERATING CONTROL POSITIONS	APPLICABLE 980N-1 INDICATIONS	APPLICABLE 339H-1( ) INDICATIONS	MOST PROBABLE CAUSE OF ABNORMAL INDICATION
1	Not required for minimum performance test.	Remove the 339H-1( ) from its instrument panel position, and install it in the recess provided in the 980N-1. Ensure that the connectors are mated properly.			
2	Preliminary.	Remove the 980N-1 cable assembly from its storage position in the top cover, and mate the terminating connector with the 860F-1 front panel connector.			
		Note Before applying power, be certain that the strapping options in the 980N-1 correspond to those of the 860F-1 under test. Refer to paragraph 3.1 in this section for specific information.			
3	Preliminary.	With the TEST SELECT switch on the 980N-1 in the OFF position, apply power to the AL-101 system and allow 15 minutes for warmup. (The warmup period, obviously, is not necessary if the equipment has been operating immediately before this test is to be performed.) If remote switching is used, be certain the remote switch is on.			
4	980N-1 self-test.	TEST SELECT: 980N-1 SELF TEST; ALTITUDE STANDARD: adjust for meter movement.	All lamps are lit, and meter pointer moves with ALTITUDE STANDARD adjustment.	Pointer indicates ramp altitude; and refer to note (3).	980N-1
5	AL-101 self-test.	TEST SELECT: AL-101 SELF TEST	A/P WARN lamp: lit; and refer to note (3).	Flag in view; and refer to notes (3) and (5).	860F-1 or 339H-1( )

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set (Cont)

STEP	TEST TITLE, REMARKS, AND SPECIAL INSTRUCTIONS	APPLICABLE 980N-1 SWITCH OR OPERATING CONTROL POSITIONS	APPLICABLE 980N-1 INDICATIONS	APPLICABLE 339H-1( ) INDICATIONS	MOST PROBABLE CAUSE OF ABNORMAL INDICATION
6	Auxiliary altitude output test at 480 feet.	TEST SELECT: AUX/IND ALTITUDE; AID/ALT SELECT: 480FT( ); ALTITUDE STANDARD: zero meter; and refer to note (1).	Digital readout: 480; FLAG lamp: lit; MDA lamp: refer to note (3).	Flag out of view; MDA lamp (if used): refer to note (3); Pointer: 480 feet.	860F-1 or 339H-1( ) as applicable
7	Auxiliary altitude output test at selected altitudes.	TEST SELECT: AUX/IND ALTITUDE; AID/ALT SELECT: VARIABLE; ALTITUDE control: adjust to selected test altitude(s); ALTITUDE STANDARD: adjust to zero meter, and refer to note (1).	Digital readout: selected altitude; MDA lamp: refer to note (3).	Pointer: indicates same altitude as digital readout on 980N-1; Flag out of view; MDA lamp: refer to note (3).	860F-1 or 339H-1( ) as applicable
8	Autopilot altitude output test at 480 feet.	TEST SELECT: A/P ALTITUDE AND TRIPS; AID/ALT SELECT: 480FT( ); ALTITUDE STANDARD: zero meter, and refer to note (1).	Digital readout: 480; FLAG lamp: lit; A/P NO WARN lamp: lit; MDA lamp: refer to note (3).	Flag out of view; MDA lamp (if used): refer to note (3); Pointer: 480 feet.	860F-1 if step 6 result was correct, 339H-1( ) if pointer indication and digital readout do not agree

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set (Cont)

STEP	TEST TITLE, REMARKS, AND SPECIAL INSTRUCTIONS	APPLICABLE 980N-1 SWITCH OR OPERATING CONTROL POSITIONS	APPLICABLE 980N-1 INDICATIONS	APPLICABLE 339H-1( ) INDICATIONS	MOST PROBABLE CAUSE OF ABNORMAL INDICATION
9	Autopilot altitude output test at selected altitudes. (This step can be omitted if step 10 is to be performed.)	TEST SELECT: A/P ALTITUDE AND TRIPS; AID/ALT SELECT: VARIABLE; ALTITUDE (control): Adjust to selected test altitude(s); ALTITUDE STANDARD: Adjust to zero meter, refer to note (1).	Digital readout: selected altitude(s); TRIP lamp: refer to note (2); MDA lamp: refer to note (3); A/P WARN and A/P NO WARN lamps: refer to note (4).	Pointer: indicates same altitude as digital readout; on 980N-1; Flag out of view; MDA lamp: refer to note (3).	860F-1 or 339H-1( ) as applicable

Note

In step 10, the altitude trip operating points are checked. The operating points indicated in each test refer to equipment as it is shipped from the factory. If the operating points have been readjusted, then those values must be used in place of those indicated. Refer to the applicable section in the AL-101 Radio Altimeter System Maintenance Manual for more specific information.

The procedure to be followed in performing the tests is as follows:

(1) Set the TEST SELECT switch to A/P ALTITUDE AND TRIPS (this position is maintained).

(2) Set the AID/ALT SELECT switch to VARIABLE (this position is maintained).

(3) Set the ALTITUDE TRIP SELECT switch to the position indicated in the applicable 980N-1 switch or operating control positions column (the position changes for each test).

(4) Adjust the ALTITUDE control until the TRIP lamp goes off, then return until the lamp just goes on again.

(5) Adjust the ALTITUDE STANDARD to zero the meter as outlined in note (1).

(6) Note that the ALTITUDE STANDARD digital readout indicates the trip operating point (either as indicated for each test or as readjusted).

(7) Proceed to the next test, and repeat steps (3) through (6).

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set (Cont)

STEP	TEST TITLE, REMARKS, AND SPECIAL INSTRUCTIONS	APPLICABLE 980N-1 SWITCH OR OPERATING CONTROL POSITIONS	APPLICABLE 980N-1 INDICATIONS	APPLICABLE 339H-1( ) INDICATIONS	MOST PROBABLE CAUSE OF ABNORMAL INDICATION
10	Altitude trip operating point check. (* indicates factory-set operating point)	ALTITUDE TRIP SELECT: 1; ALTITUDE (control): adjust; ALTITUDE STANDARD: adjust to zero meter.	Digital readout: indicates trip no. 1 operating point or *15 (feet).	Pointer: indicates same altitude as digital readout on 980N-1.	860F-1 or 339H-1( ) as applicable
		ALTITUDE TRIP SELECT: 2; ALTITUDE (control): adjust; ALTITUDE STANDARD: adjust to zero meter.	Digital readout: indicates trip no. 2 operating point or *50 (feet).		
		ALTITUDE TRIP SELECT: 5; ALTITUDE (control): adjust; ALTITUDE STANDARD: adjust to zero meter.	Digital readout: indicates trip no. 5 operating point or *100 (feet).		
		ALTITUDE TRIP SELECT: 6; ALTITUDE (control): adjust; ALTITUDE STANDARD: adjust to zero meter.	Digital readout: indicates trip no. 6 operating point or *250 (feet).		
		ALTITUDE TRIP SELECT: 7; ALTITUDE (control): adjust; ALTITUDE STANDARD: adjust to zero meter.	Digital readout: indicates trip no. 7 operating point or *1000 (feet).		
		ALTITUDE TRIP SELECT: 8; ALTITUDE (control): adjust; ALTITUDE STANDARD: adjust to zero meter.	Digital readout: indicates trip no. 8 operating point or *1500 (feet).		

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set (Cont)

STEP	TEST TITLE, REMARKS, AND SPECIAL INSTRUCTIONS	APPLICABLE 980N-1 SWITCH OR OPERATING CONTROL POSITIONS	APPLICABLE 980N-1 INDICATIONS	APPLICABLE 339H-1( ) INDICATIONS	MOST PROBABLE CAUSE OF ABNORMAL INDICATION
11	Vswr test - introduction.	In this step the vswr on the receive and transmit antenna cables is tested. Addition of two (or more) vswr's is usually meaningless; in this test, however, addition provides a convenient means of evaluating the results. The sum of the vswr's on both cables (that is, the result of step 11B plus the result of step 11C) must be no greater than 4.8 nor less than 2.8, and a total vswr between 4.0 and 4.8 is questionable. For individual cables, the nominal vswr is 1.7; in no case can a vswr greater than 3.0 nor less than 1.4 be tolerated, and an individual vswr between 2.4 and 3.0 is questionable. For example: A vswr of 2.1 on each cable, which results in a total of 4.2, is acceptable even though it is greater than 4.0. However, one vswr of 2.5 and the other 1.7, which still results in a total of 4.2, should be corrected.			
	Vswr test - most probable cause of abnormal indication.	Any deviation from the nominal 1.7 is an indication of one or more of the following conditions: a. Improper antenna-cable-connector installation, either at the 860F-1 rear connector, or at the antenna, or both. b. Poor cable condition; poor shielding, jacket worn so that shielding is exposed, sharp bends in cable so that shielding buckles, cracked or broken dielectric within the cable. c. Damaged antenna. d. Improper tuning stub adjustment in the 860F-1. (The cables used in bench testing/aligning the 860F-1 must be in good condition in order to properly adjust the vswr tuning stubs.)			

Note

In multisystem installations, it is important that only the system under test be energized when making vswr tests.

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set (Cont)

STEP	TEST TITLE, REMARKS, AND SPECIAL INSTRUCTIONS	APPLICABLE 980N-1 SWITCH OR OPERATING CONTROL POSITIONS	APPLICABLE 980N-1 INDICATIONS	APPLICABLE 339H-1( ) INDICATIONS	MOST PROBABLE CAUSE OF ABNORMAL INDICATION
11A	VSWR test - meter calibration.	TEST SELECT: VSWR; RCVR-SET-XMTR: SET; SET ∞ : adjust for ∞ indication on vswr scale.	Meter (pointer): ∞	Not applicable	Not applicable
11B	VSWR test - receive antenna cable.	TEST SELECT: VSWR; RCVR-SET-XMTR: RCVR (hold).	Refer to introduction, step 11.		
	Flex cable slightly.		Meter (pointer): indication should not change.		
11C	VSWR test - transmit antenna cable.	TEST SELECT: VSWR; RCVR-SET-XMTR: XMTR (hold).	Refer to introduction, step 11.		
	Flex cable slightly.		Meter (pointer): indication should not change.		

Table 3-1. Postinstallation Testing and Troubleshooting Procedures Using the 980N-1 Altimeter Test Set (Cont)

STEP	TEST TITLE, REMARKS, AND SPECIAL INSTRUCTIONS	APPLICABLE 980N-1 SWITCH OR OPERATING CONTROL POSITIONS	APPLICABLE 980N-1 INDICATIONS	APPLICABLE 339H-1( ) INDICATIONS	MOST PROBABLE CAUSE OF ABNORMAL INDICATION
12	Final.	Return TEST SELECT switch to OFF position. Turn off all aircraft power to AL-101 system. Remove 339H-1( ) from 980N-1 front panel (if step 1 was performed), and reinstall in aircraft instrument panel. Disconnect 980N-1 from 860F-1 front panel connector. Roll up cable assembly, and store in 980N-1 top cover. Place connector cover on 860F-1 front panel connector.			
13	System self-test.	Reapply power to AL-101 system. Press and hold self-test switch on 339H-1( ) or elsewhere on instrument panel. Note that 339H-1( ) pointer indicates correct self-test altitude, flag is in view (unless logic strapping has been changed in 860F-1), and MDA indication is according to note (3). Release self-test switch, and note that pointer returns to taxi altitude indication (less than 0 foot), flag goes out of view, and MDA indication is according to note (3).			
14		Turn off all power to AL-101 system, and remove test equipment from aircraft.			

section 4

principles of operation

4.1 FUNCTIONAL DESCRIPTION OF 980N-1 OPERATING CONTROLS AND INDICATORS

4.1.1 General

This paragraph contains a functional description of each operating control and test indicator used on the 980N-1. (Refer to figure 4-1*.) This information, together with the block diagrams, (figures 7-2 through 7-6) provides the operator with sufficient knowledge of the principles of 980N-1 operation to form a logical conclusion as to the most probable cause of an abnormal indication obtained during AL-101 system or 980N-1 testing/troubleshooting. The block diagrams show all switch terminal connections for each TEST SELECT switch position.

4.1.2 ALTITUDE STANDARD Device

The ALTITUDE STANDARD is a digital readout device with an associated precision potentiometer. The +30-volt dc output from the 860F-1 is applied across this potentiometer. The voltage at the wiper is applied directly to one side of the meter circuit. The altitude output voltage from the 860F-1 (either auxiliary or autopilot, depending on the TEST SELECT switch position) is applied to the other side of the meter circuit through the METER SENS switch. Any unbalance in the two voltages causes the meter to deflect from the 0 position. When the ALTITUDE STANDARD is adjusted so that the meter indicates 0 (or midscale), the digital readout indicates the altitude (in feet) corresponding to the altitude output voltage.

4.1.3 Meter

The meter used in the 980N-1 contains a single pointer movement with two scales. One scale is used in adjusting the ALTITUDE STANDARD as described in paragraph 4.1.2. The other scale is used to measure the vswr on the antenna cables. The movement is very sensitive and for that reason is protected by diodes against high currents.

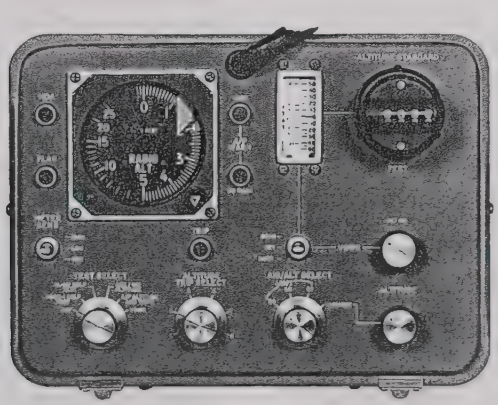


Figure 4-1. 980N-1 Operating Controls and Indicators

(*) Figure 4-1 also shows the 339H-1( ) indicator installed in the 980N-1 front panel.

4.1.4 METER SENS Switch

The METER SENS switch connects different values of resistance in series with the meter movement. The largest value of resistance is connected when the switch is in the LOW position, with lesser amounts in the MED and HIGH positions.

4.1.5 AID/ALT SELECT Switch

The AID/ALT SELECT switch functions only when the TEST SELECT switch is in either the AUX/IND ALTITUDE or A/P ALTITUDE AND TRIPS position. With the AID/ALT SELECT switch in the 480FT range (either 20, 40, or 57), a precision frequency is generated by a crystal-controlled oscillator. This frequency represents an altitude of 480 feet. With the AID/ALT SELECT switch in the VARIABLE position, the vco (voltage-controlled oscillator) generates the altitude frequency and is adjusted by the ALTITUDE control. (Refer to paragraph 4.1.7 for additional information on the vco.)

4.1.6 ALTITUDE Control

The ALTITUDE control is a potentiometer that varies the voltage applied to the vco. The internally generated +30 volts dc is the reference source for the ALTITUDE control.

4.1.7 Frequency Generators

The 980N-1 contains two frequency generators, a crystal-controlled oscillator, and a voltage-controlled oscillator. The crystal-controlled oscillator generates one of three frequencies depending on the AID/ALT SELECT switch position (19.885 kHz, 20.285 kHz, or 20.625 kHz). These frequencies represent 480 feet in altitude for 20- , 40- , or 57-foot AID values, respectively. The output from the crystal-controlled oscillator is applied to the 860F-1 only when the AID/ALT SELECT switch is in the 480FT range. The voltage-controlled oscillator generates frequencies from 600 Hz (approximately -20 feet) to 130 kHz (approximately 3000 feet). The frequency is controlled by the ALTITUDE control and is applied to the 860F-1 when the AID/ALT SELECT switch is in the VARIABLE position.

4.1.8 TRIP SELECT Switch and TRIP Lamp

The TRIP lamp and amplifier circuit is energized by the +30 volts dc internally generated from the 26-volt ac input. The voltage is applied only when the TEST SELECT switch is in the 980N-1 SELF TEST, AL-101 SELF TEST, or A/P ALTITUDE AND TRIPS position. The amplifier circuit is essentially an on-off switch for the lamp and is used to isolate the trip relay contacts from the lamp current. The specific trip to be tested is selected by the ALTITUDE TRIP SELECT switch. When the 860F-1 trip relay contacts (associated with the trip being tested) close, the trip amplifier circuit enables the trip lamp switching transistor, causing the lamp to light. Special strapping is required and depends on whether the trip common terminal is at ground or +27 volts dc. If A5CR67 has been removed from the 860F-1 being tested, the TRIP lamp will not operate in AL-101 SELF TEST for any ALTITUDE TRIP SELECT switch position.

The TRIP lamp is always lit when the TEST SELECT switch is in the 980N-1 SELF TEST position, regardless of the position of the ALTITUDE TRIP SELECT switch.

The following statement applies in testing any trip: when the input frequency corresponds to an altitude greater than the operating point of the trip under test, the TRIP lamp is out; when the simulated altitude is equal to or less than the trip operating point, the lamp is lit.

4.1.9 A/P WARN and A/P NO WARN Lamps

An amplifier/switching circuit, identical to that of the TRIP lamp, is used for the A/P WARN and A/P NO WARN lamps. Like the trip amplifier circuit, both of these circuits are energized by the internally generated +30-volt dc supply and only when the TEST SELECT switch is in the 980N-1 SELF TEST, AL-101 SELF TEST, or A/P ALTITUDE AND TRIPS position. These lamp circuits operate (by virtue of the 860F-1 A/P warn relay contacts) so that both lamps are never lit simultaneously except when the TEST SELECT switch is in the 980N-1 SELF TEST position.

In normal operation, the A/P NO WARN lamp is lit and the A/P WARN lamp is out for all test altitudes below approximately 2500 feet. Normally, when the indicated altitude is greater than 2500 feet, the A/P WARN lamp is lit and the A/P NO WARN lamp is out. An A/P WARN lamp lit below 2500 feet indicates a warn condition in the 860F-1.

4.1.10 MDA Lamp

The MDA lamp is energized by the 26-volt ac supply from the 860F-1. An internal ground is provided in 980N-1 SELF TEST to light the MDA lamp. During all other tests except VSWR, the ground is provided through the 339H-1( ) MDA trip output terminals. Consequently, the MDA lamp will not operate in other than 980N-1 SELF TEST if the 339H-1( ) is not installed in the 980N-1. Also, with a normal 26-volt ac input from the 860F-1, any abnormal MDA lamp indication is known to be a result of improper operation of the 339H-1( ) MDA relay and/or relay control circuit.

4.1.11 FLAG Lamp

The FLAG lamp is lit directly by the flag output voltage from the 860F-1 for all tests except 980N-1 SELF TEST. In this test the +30 volts dc (internally generated) is used to light the FLAG lamp. Ordinarily, if the FLAG lamp is out, the 339H-1( ) flag must be in view (unless mechanically restricted); and if the FLAG lamp is lit, the 339H-1( ) flag should be out of view. If both the lamp is lit and the flag is in view, a warn condition is indicated for the 339H-1( ). This can be caused by any one or more of the following:

a. No 26 volts ac to the 339H-1( ) or its flag control circuits.

b. No +30-volt dc supply (from the 980N-1 during testing and 860F-1 in normal operation).

c. No flag voltage to the flag solenoid (a wiring problem when the 980N-1 FLAG lamp is lit).

d. Null detector operation (indicating some other malfunction in the 339H-1( ).

In AL-101 SELF TEST, with log strapping as factory installed, the flag voltage is off. Consequently, the FLAG lamp is out and the 339H-1( ) flag is in view. Also, the flag voltage is off for virtually any type of failure or warn condition in the 860F-1.

4.1.12 SET ∞ Control and RCVR-SET-XMTR Switch

With the TEST SELECT switch in the VSWR position and the RCVR-SET-XMTR switch in the normal-released (SET) position, the SET ∞ control is used to calibrate the meter in preparation for a vswr test. In addition, with the TEST SELECT switch in the VSWR position, the AL-101 system is in self-test, since a ground is applied to self-test terminals J9-j and P1B-24. To individually test the vswr on the transmit and receive antenna cables, the bias current through circulators Z1 and Z2 is controlled as follows:

a. With the RCVR-SET-XMTR switch held in the XMTR position, +27 volts dc is applied to the normally negative side of the transmit circulator Z1, thus blocking current flow through the circulator bias coil. Bias current, however, is maintained through receive circulator Z2. In this condition, the transmitted signal is applied directly to the transmit antenna cable as in normal (other than self-test) operation. A signal (vswr) is reflected back through the transmit circulator, self-test delay line, receive circulator, and into the receiver circuits. The tracking filter output resulting from this signal is used in the 980N-1 as the transmit vswr test signal. If the vswr is correct, a meter indication of 1.7 should be obtained.

b. With the RCVR-SET-XMTR switch in the RCVR position, the +27-volt dc blocking voltage is removed and the receive circulator bias coil is shorted. In this condition, the transmitted signal is coupled from the transmitter output directly into the self-test delay line, bypassing the transmit antenna as is normal for self-test. From the delay line, the signal is coupled through the receive circulator to the receive antenna (no bias current in this circulator). The signal from the receive antenna

cable (vswr) is then reflected back through the receive circulator and into the receiver circuits.

The introduction to the vswr tests, step 11 on table 3-1, adequately describes the results that should be obtained, as well as outlining the probable cause of an abnormal result. The vswr tuning stubs in the 860F-1 are factory adjusted to provide a vswr of 1.7:1. Any deviation from this value, in either direction, reflects degradation. The signal resulting from this vswr is used in the 860F-1 vswr monitor circuit. Any vswr less than 1.4 results in a signal too low in amplitude to permit satisfactory monitoring.

An intermittent poor vswr can occasionally be detected by flexing the cable slightly during test. Any meter movement, while the cable is being flexed, cannot be tolerated.

Cable-connector installation instructions are contained in the removal/installation section of the AL-101 Radio Altimeter Maintenance Manual.

section 5
maintenance

5.1 980N-1 ALTIMETER TEST SET MAINTENANCE

This paragraph contains the information needed to test and align the 980N-1. The test equipment required is listed in table 5-1. Equivalent equipment can be substituted provided the specifications of each meets or exceeds those of the listed equipment it is to replace. The 980N-1 Test Adapter called out in table 5-1 is to be fabricated locally and provides a convenient means of applying the necessary power and signal inputs and monitoring the resulting 980N-1 outputs. Figures 7-7 through 7-9 and table 7-1 contain the information needed to fabricate the test adapter in addition to showing the test setup used in testing the 980N-1.

Paragraph 5.2 contains the testing and alignment procedures to be used in testing the 980N-1. As a minimum performance test, only the following steps need be performed: 1, 2, 3, 4, 8 (not including 8A through 8D), those portions of step 11 marked (*), and those portions of steps 15 and 16B marked "minimum performance test."

5.2 980N-1 TESTING AND ALIGNMENT PROCEDURES

Refer to table 5-2.

Table 5-1. Test Equipment Required

EQUIPMENT	MANUFACTURER	SPECIFICATION
Ac vtvm	Hewlett-Packard 400D	1-mv to 30-v range, 20-Hz to 130-kHz frequency, ±5% accuracy.
Vom	Triplett 630	0 to 100 megohms range, 0 to 30 vac and vdc, 3% accuracy.
Dc vtvm	Fluke 801B	±0.05% accuracy, 0- to 30-vdc range.
Oscilloscope	Tektronix 543	Dc to 130-kHz range.
Ac ammeter	Weston 904M	0 to 2-ampere range.
Dc ammeter	Weston 901	0- to 2-ampere range.
Frequency counter	Hewlett-Packard 5212A	50-mv sensitivity, 600-Hz to 132-kHz range.
Variac or 23- to 30-vac, 400-Hz, power supply	Any	To convert 115-vac, 400-Hz power into 26 vac.
Dc power supply (2 required)	H-Lab 6242A	+30 vdc, 0.05% accuracy.
Frequency generator	Hewlett-Packard 200CD	3000 Hz, 1-volt rms output, 1% distortion, ±2% accuracy.
980N-1 Test Adapter	Fabricated locally	Refer to figures 7-7 through 7-9 and table 7-1 for fabrication information.
Decade resistance box	Heath DR 1	600- to 1500-ohm range.

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
1	Preliminary	Connect equipment as shown on figure 7-7 and apply power.		TEST SELECT: OFF.	Vom / TB2-J1 / -0.5 to +0.5 vdc	
2	Power supply checks		S1: -30 VDC/26 VAC	TEST SELECT: OFF.	Dc vtvm / -30.00 ± 0.01 vdc	Adjust 30-vdc supply no. 2.
					Ac vtvm / 26.0 ± 3.0 vac	Adjust 26-vac supply.
			S1: +30 VDC/ VSWR		Dc vtvm / +30.00 ± 0.01 vdc	Adjust 30-vdc supply no. 1.
					Ac vtvm / (no reading)	
			S1: FLAG		Dc vtvm / +27.0 ± 3.0 vdc	Adjust R2, on test adapter, for nominal +27 vdc.
			S1: +30 VDC/ VSWR		Dc vtvm / +30.00 ± 0.01 vdc	Readjust 30-vdc supply no. 1 if necessary.

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
3	980N-1 supply checks	Connect ac ammeter in series with 26-vac input to J10 on test adapter; connect dc vtvm to TB2-J1 on 980N-1.	S1: -30VDC/ 26 VAC	TEST SELECT: 980N-1 SELF TEST; AID/ALT SELECT: VARIABLE.	Ammeter / 1.2 a max	
					Dc vtvm / TB2-J1 / +30.000 ±0.005 vdc	Adjust TB2-R32 (coarse) and TB2-R33 (fine).
		Connect oscilloscope to TB2-J1 on 980N-1.			Oscilloscope / TB2-J1 / 0.025 v p-p max (0.010 v rms)	
		Connect 200 ohms (10 w) from TB2-J1 to ground; decrease 26-vac input to approximately 23.5 vac; connect dc vtvm across 100-ohm resistor.	S1: -30VDC/ 26 VAC	TEST SELECT: 980N-1 SELF TEST; AID/ALT SELECT: VARIABLE.	Ac vtvm / 23.5 v rms (approx)	Ac ammeter current indication should not increase above 1.5 a.
					Dc vtvm / TB2-J1 / +30.00 ±0.05 vdc	
					Oscilloscope / TB2-J1 / 0.075 v p-p max (0.03 v rms)	
		Same as above except increase 26-vac input to approximately 28.0 vac.	S1: -30VDC/ 26 VAC	TEST SELECT: 980N-1 SELF TEST; AID/ALT SELECT: VARIABLE.	Ac vtvm / 28 v rms (approx)	Ac ammeter current indication should not increase above 1.5 a.
					Dc vtvm / TB2-J1 / +30.00 ±0.05 vdc	
					Oscilloscope / TB2-J1 / 0.075 v p-p max (0.030 v rms)	
		Remove 100-ohm resistor from TB2-J1 and readjust 26-vac supply to 26 vac (nominal).	S1: -30VDC/ 26 VAC	TEST SELECT: 980N-1 SELF TEST; AID/ALT SELECT: VARIABLE.	Ac vtvm / 26.0 ±3.0 vac	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
4	External +30-vdc input supply check	Connect dc vtvm to test adapter terminals J2/J3 for first test; then connect positive lead to TB3-J1 for second test.	S1: +30 VDC/ VSWR	TEST SELECT: Step through all positions except OFF.	Dc vtvm / (on test adapter) / +30.00 +0.01 vdc	Adjust 30 vdc supply no. 1 if necessary.
					Dc vtvm / TB3-J1 / +30.00 ±0.01 vdc	The source for this check is the same as above, so measurements should be identical.
	Internal +30-vdc supply check	Connect dc vtvm to TB2-J1 for first test, then to TB3-J3 for second and third.		TEST SELECT: 980N-1 SELF TEST, AL-101 SELF TEST, A/P ALTITUDE AND TRIPS (only); AID/ALT SELECT: VARIABLE.	Dc vtvm / TB2-J1 / +30.000 ±0.005 vdc	Adjust TB2-R32 (coarse) and TB2-R33 (fine) if necessary.
					Dc vtvm / TB3-J3 / +30.000 ±0.005 vdc	
				AID/ALT SELECT: VARIABLE; TEST SELECT: AUX/IND ALTITUDE, VSWR (only).	Dc vtvm / TB3-J3 / 0 vdc	
5	External -30-vdc input supply check	Connect dc vtvm to test adapter terminals J2/J3 (set for negative voltage) for first test, then to TB3-J1 for second.	S1: -30VDC/ 26 VAC	TEST SELECT: Step through all positions except OFF.	Dc vtvm / (on test adapter) / -30.00 ±0.01 vdc	The voltage measurements in this test should be identical.
					Dc vtvm / TB3-J1 / -30.00 ±0.01 vdc	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
6	Modulator disable capability check			TEST SELECT: AUX/IND ALTITUDE and A/P ALTITUDE AND TRIPS only.	DS2 (on test adapter) / lit	DS2 is also lit when TEST SELECT switch is in AL-101 SELF TEST and VSWR positions, but these are separate tests.
7	AL-101 SELF TEST function check			TEST SELECT: AL-101 SELF TEST and VSWR only.	DS2 (on test adapter) / lit	
8	980N-1 lamp checks	It is understood that the front panel lamp is on for all TEST SELECT switch positions.		TEST SELECT: 980N-1 SELF TEST.	All 980N-1 lamps / lit (This includes the front panel lamp.)	
				TEST SELECT: OFF.	All 980N-1 lamps / out (This includes the front panel lamp.)	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
8A	Individual 980N-1 lamp checks A/P WARN and A/P NO WARN lamps		S4: GRD or +27 VDC (depending on strapping option)	TEST SELECT: AL-101 SELF TEST and A/P ALTITUDE AND TRIPS only.		
			S3: NO		A/P WARN lamp / lit, A/P NO WARN lamp / out	
			S3: NC		A/P WARN lamp / out, A/P NO WARN lamp / lit	
8B	FLAG lamp check		S1: FLAG	TEST SELECT: Step through all positions except OFF.	Dc vtvm / +27 vdc nominal	
					FLAG lamp / lit	
		Adjust R2 (on test adapter) for minimum reading on dc vtvm.		TEST SELECT: Step through all positions except OFF and 980N-1 SELF TEST.	Dc vtvm / 0 vdc	
					FLAG lamp / out	
				TEST SELECT: 980N-1 SELF TEST.	Dc vtvm / 0 vdc	In this test the internal +30-vdc is used to energize the FLAG lamp.
					FLAG lamp / lit	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
8C	Individual 980N-1 lamp checks (Cont) TRIP lamp		S4: GRD or +27 VDC (depending on strapping option)	TEST SELECT: AL-101 SELF TEST and A/P ALTITUDE AND TRIPS only.	TRIP lamp / out	
			S2: Depress and hold	ALTITUDE TRIP SELECT: Step through all positions.	TRIP lamp / lit	
8D	MDA lamp			TEST SELECT: 980N-1 SELF TEST.	MDA lamp / lit	
				TEST SELECT: AL-101 SELF TEST.	MDA lamp / out	
		Jumper 980N-1 connector P2 terminal f to ground.			MDA lamp / lit	
		Remove jumper.		TEST SELECT: AUX/IND ALTITUDE.	MDA lamp / out	
		Jumper 980N-1 connector P2 terminal f to ground.			MDA lamp / lit	
		Remove jumper.		TEST SELECT: A/P ALTITUDE AND TRIPS.	MDA lamp / out	
		Jumper 980N-1 connector P2 terminal f to ground.			MDA lamp / lit	
		Remove jumper.				MDA lamp is not energized in VSWR test.

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
9	Circulator control switch check			XMTR-SET-RCVR: SET.	DS1 / (on test adapter) / out	
				XMTR-SET-RCVR: XMTR.	DS1 / (on test adapter) / lit	
				XMTR-SET-RCVR: RCVR.	DS1 / (on test adapter) / lit	
10	METER SENS control check		S1: ALT; R1: adjust for +29.50 ± 0.500 vdc on dc vtvm	TEST SELECT: AUX/IND ALTITUDE; ALTITUDE STANDARD: 0000; METER SENS: LOW.	Dc vtvm / (on test adapter) / +30.00 ± 0.40 vdc	
					980N-1 meter / pointer at maximum deflection	
			S1: ALT; R1: adjust for +5.50 ± 0.50 vdc on dc vtvm	Same as above except METER SENS: MED.	Dc vtvm / (on test adapter) / +6.00 ± 0.20 vdc	
					980N-1 meter / pointer at maximum deflection	
			S1: ALT; R1: adjust for +1.0 ± 0.2 vdc on dc vtvm	Same as above except METER SENS: HIGH.	Dc vtvm / (on test adapter) / +1.20 ± 0.02 vdc	
					980N-1 meter / pointer at maximum deflection	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
		Note				
		In step 11 the accuracy of the ALTITUDE STANDARD digital readout is checked. The sequence of operations to be followed is as follows: (1) adjust R1, on test adapter, for the desired ALT test voltage as indicated on the dc vtvm, (2) adjust the ALTITUDE STANDARD control to zero the 980N-1 meter with the METER SENS switch first in LOW, then MED, and finally in HIGH position. With the meter zeroed, the digital readout (indicated "Readout" in the test results column) and the dc vtvm reading should correspond to those values indicated in the test results column (allow ±1 percent in digital readout accuracy). As a minimum performance test, only those marked (*) need be performed. Those tests marked (#) correspond to altimeter self-test altitudes. Those marked (##) correspond to altitude trip operating points as factory set.				
11	ALTITUDE STANDARD accuracy check	(*)	S1: ALT; R1: adjust	TEST SELECT: AUX/IND ALTITUDE.	Dc vtvm / +0.400 ±0.010 vdc	
					Readout / 0000 (feet)	
		(##)	R1: adjust		Dc vtvm / +0.700 ±0.050 vdc	
					Readout / 0015 (feet)	
		(#)	R1: adjust		Dc vtvm / +1.200 ±0.070 vdc	
					Readout / 0040 (feet)	
		(##)	R1: adjust		Dc vtvm / +1.400 ±0.050 vdc	
					Readout / 0050 (feet)	
		(*)(#)(##)	R1: adjust		Dc vtvm / +2.400 ±0.10 vdc	
					Readout / 0100 (feet)	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
11 (Cont)	ALTITUDE STANDARD accuracy check (Cont)	(#)	S1: ALT; R1: adjust	TEST SELECT: AUX/IND ALTITUDE.	Dc vtvm / +3.400 ±0.070 vdc	
					Readout / 0150 (feet)	
		(##)	R1: adjust		Dc vtvm / +5.400 ±0.100 vdc	
					Readout / 0250 (feet)	
		(##)	R1: adjust		Dc vtvm / +17.130 ±0.200 vdc	
					Readout / 1000 (feet)	
		(##)	R1: adjust		Dc vtvm / +21.12 ±0.20 vdc	
					Readout / 1500 (feet)	
			R1: adjust		Dc vtvm / +23.96 ±0.20 vdc	
					Readout / 2000 (feet)	
		(*)	R1: adjust		Dc vtvm / +26.17 ±0.20 vdc	
					Readout / 2500 (feet)	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
12	Crystal oscillator precision frequency check	Connect oscilloscope to TB1-J1 and frequency counter to test adapter terminals J6/J7.	S1: ALT	TEST SELECT: AUX/IND ALTITUDE; AID/ALT SELECT: 20 (480FT).	Frequency counter / (on test adapter) / 19,885 ±10 Hz	This frequency corresponds to an altitude of 480 feet using 20-foot AID.
					Oscilloscope / TB1-J1 / 20 ±5 v p-p	
				Same as above except AID/ ALT SELECT: 40 (480FT).	Frequency counter / (on test adapter) / 20,285 ±10 Hz	This frequency corresponds to an altitude of 480 feet using 40-foot AID.
					Oscilloscope / TB1-J1 / 20 ±5 v p-p	
				Same as above except AID/ ALT SELECT: 57 (480FT).	Frequency counter / (on test adapter) / 20,625 ±10 Hz	This frequency corresponds to an altitude of 480 feet using 57-foot AID.
					Oscilloscope / TB1-J1 / 20 ±5 v p-p	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
				Note There is no calibration involved in the vco (voltage controlled oscillator) except to establish the minimum and maximum frequencies (600 and 132,000 Hz). This is done by selecting a value for TB1-R36 (step 14). The tests in step 13 are identical to steps 15A and 15D, consequently, step 13 need not be performed in a minimum performance test.		
13	Vco operation check at low frequency	Connect oscilloscope to TB1-J2 and frequency counter to the vertical output terminals on the oscilloscope.	S1: ALT	TEST SELECT: AUX/IND ALTITUDE; AID/ALT SELECT: VARIABLE; ALTITUDE control: Fully ccw.	Frequency counter / (on oscilloscope) / 600 ± 50 Hz	Select TB1-R36 (step 14)
					Oscilloscope / TB1-J2 / 30.0 ± 5.0 v p-p	
	Vco operation check at high frequency			Same as above except: ALTITUDE control: Fully cw.	Frequency counter / (on oscilloscope) / 132,000 ± 10,000 Hz	Select TB1-R36 (step 14)
					Oscilloscope / TB1-J2 / 22.0 ± 5.0 v p-p	
14	TB1-R36 select	Remove existing TB1-R36 and connect decade resistance box between these same terminals; adjust resistance to 700 ohms. (Allow at least 2 minutes for frequency to stabilize after power turn-on.) Frequency counter on oscilloscope as in step 13.	S1: ALT	TEST SELECT: AUX/IND ALTITUDE; AID/ALT SELECT: VARIABLE; ALTITUDE control: Fully cw.	Adjust resistance box to obtain 132,000 ± 10,000-Hz indication on frequency counter.	Select TB1-R36 from the following values nearest the adjusted value: 619, 681, 750, 825, 909, or 1000 ohms.

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
			Note In steps 15A through 15D a check is made of vco operation at selected frequencies. For each test, adjust the ALTITUDE control for the desired frequency counter indication; then check the voltage indications on the oscilloscope (vco output at TB1-J2) and the vtvm (simulated altitude-test set output at P1-N). The difference between the two readings (aside from p-p for one and rms for the other) is a function of the rolloff characteristics of the buffer amplifier and low-pass filter (approximately 6 db/octave above 600 Hz). As a minimum performance test, only those tests so indicated in the special instructions column need be performed. If it is considered desirable to check the operation of the vco starting circuit (TB1-Q18 and Q19), proceed as follows: After each minimum performance test, turn the TEST SELECT switch to the OFF position, wait for 2 to 5 seconds, return the TEST SELECT switch to the AUX/IND ALTITUDE position, and wait for approximately 2 minutes (or until frequency has stabilized). Note that the waveshape, frequency, and voltage indications return to the same values that existed before turnoff.			
15A	Vco operation check (Preliminary)	Connect frequency counter to test adapter terminals J6/J7; oscilloscope to TB1-J2; ac vtvm to test adapter terminals J4/J5.	S1: ALT	For all tests except starting circuit test: TEST SELECT: AUX/IND ALTITUDE; AID/ALT SELECT: VARIABLE; ALTITUDE control: Adjust. For starting circuit test: TEST SELECT: OFF; DO NOT DISTURB ALTITUDE CONTROL WHILE TEST SELECT IS OFF.		

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
15B	Vco operation check	Minimum performance test.		ALTITUDE control: Fully cw.	Frequency counter / (on test adapter) / 600 ±50 Hz	
					Oscilloscope / TB1-J2 / 30.0 ±5.0 v p-p	
					Ac vtvm / (on test adapter) / 1.7 ±0.5 v rms	
				ALTITUDE control: Adjust.	Frequency counter / (on test adapter) / 1000 ±20 Hz	
					Oscilloscope / TB1-J2 / 30.0 ±5.0 v p-p	
					Ac vtvm / (on test adapter) / 1.0 ±0.5 v rms	
				ALTITUDE control: Adjust.	Frequency counter / (on test adapter) / 4000 ±60 Hz	
					Oscilloscope / TB1-J2 / 30.0 ±5.0 v p-p	
					Ac vtvm/ (on test adapter) /0.270 ±0.075 v rms	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
15C	Vco operation check	Minimum performance test.		ALTITUDE control: Adjust.	Frequency counter / (on test adapter) / 10,000 ± 150 Hz	
					Oscilloscope / TB1-J2 / 29.0 ± 5.0 v p-p	
					Ac vtvm / (on test adapter) / 0.110 ± 0.050 v rms	
				ALTITUDE control: Adjust.	Frequency counter / (on test adapter) / 40,000 ± 600 Hz	
					Oscilloscope / TB1-J2 / 28.0 ± 5.0 v p-p	
					Ac vtvm / (on test adapter) / 0.060 ± 0.050 v rms	
				ALTITUDE control: Adjust.	Frequency counter / (on test adapter) / 100,000 ± 1500 Hz	
					Oscilloscope / TB1-J2 / 25.0 ± 5.0 v p-p	
					Ac vtvm / (on test adapter) / 0.060 ± 0.050 v rms	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
15D	Vco operation check	Minimum performance test.		ALTITUDE control: Adjust.	Frequency counter / (on test adapter) / 132,000 ± 10,000 Hz	
					Oscilloscope / TB1-J2 / 22.0 ± 5.0 v p-p	
					Ac vtvm / (on test adapter) / 0.060 ± 0.050 v rms	
16A	VSWR meter adjust	Jumper TB2-J4 to ground.	S1: +30 VDC/ VSWR	TEST SELECT: VSWR.	980N-1 meter pointer on VSWR scale red line	Adjust TB2-R20.
		Remove jumper.				
16B	VSWR - SET ∞ control linearity check	Connect frequency generator to test adapter terminals J8/J9 and adjust for 3000 ± 100 Hz at 0.500 ± 0.010 v rms as indicated by frequency counter (on test adapter terminals J6/J7) and ac vtvm (on test adapter terminals J4/J5) respectively.	S1: +30 VDC/ VSWR	TEST SELECT: VSWR for all tests in this step; SET ∞ : Adjust for ∞ pointer indication on VSWR scale.	980N-1 VSWR meter scale / pointer at ∞	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
16B (Cont)	VSWR - SET ∞ control linearity check (Cont)	Maintain frequency but reduce input amplitude to 0.100 ± 0.010 v rms.		Set∞: Adjust for∞ indication on VSWR scale.	980N-1 VSWR meter scale / pointer at∞	
		Maintain frequency but reduce input amplitude to 0.082 ± 0.005 v rms.		DO NOT READJUST SET∞ CONTROL.	980N-1 VSWR meter scale / pointer at 10	
		Maintain frequency but reduce input amplitude to 0.067 ± 0.005 v rms.		DO NOT READJUST SET∞ CONTROL.	980N-1 VSWR meter scale / pointer at 5	
		Maintain frequency but reduce input amplitude to 0.050 ± 0.005 v rms.		DO NOT READJUST SET∞ CONTROL.	980N-1 VSWR meter scale / pointer at 3	Minimum performance test
		Maintain frequency but reduce input amplitude to 0.041 ± 0.002 v rms.		DO NOT RE-ADJUST SET ∞ CONTROL.	980N-1 VSWR meter scale / pointer at 2.4	Minimum performance test
		Maintain frequency but reduce input amplitude to 0.017 ± 0.002 v rms.		DO NOT RE-ADJUST SET ∞ CONTROL.	980N-1 VSWR meter scale / pointer at 1.4	Minimum performance test

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
16C	VSWR-SET ∞ control calibrate (in preparation for vswr detector accuracy check)	Maintain frequency counter connection and frequency as in step 16B but adjust amplitude to 0.200 ± 0.010 v rms. Connect dc vtvm to 980N-1 TB2-J4.	S1: +30 VDC/ VSWR	TEST SELECT: VSWR; SET∞: Adjust for indicated voltage at TB2-J4.	Dc vtvm / TB2-J4 / +5.000 ± 0.010 vdc	
	Vswr detector accuracy check	Maintain frequency but reduce input amplitude to 0.1410 ± 0.0010 v rms.		DO NOT CHANGE ANY 980N-1 CONTROL SETTINGS.	Dc vtvm / TB2-J4 / +3.535 ± 0.100 vdc	
		Maintain frequency but reduce input amplitude to 0.1000 ± 0.0010 v rms.			Dc vtvm / TB2-J4 / +2.500 ± 0.100 vdc	
		Maintain frequency but reduce input amplitude to 0.0710 ± 0.0010 v rms.			Dc vtvm / TB2-J4 / +1.767 ± 0.050 vdc	
		Maintain frequency but reduce input amplitude to 0.0500 ± 0.0010 v rms.			Dc vtvm / TB2-J4 / +1.250 ± 0.050 vdc	
		Maintain frequency but reduce input amplitude to 0.0350 ± 0.0010 v rms.			Dc vtvm / TB2-J4 / +0.883 ± 0.020 vdc	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
		Note The remaining tests are provided in the event it is considered desirable to perform a continuity check on the wiring to 339H-1( ) mating connector P2. Unless these checks are to be performed, remove all test equipment from the 980N-1, store the cable assembly in its normal storage position in the 980N-1 top cover, reinstall the case on the 980N-1 chassis, and return all equipment to its normal storage location. To perform the continuity check on the wiring to 339H-1( ) mating connector P2, maintain the test setup shown on figure 7-7 and use the vom as instructed in the special instructions column.				
	P2 continuity check	Connect vom from P2-B to ground. Set for ac.	S1: -30 VDC/ 26 VAC	TEST SELECT: Step through all positions.	Ac vtvm / (on test adapter) / 26 vac (nominal)	
					Vom / P2-B / 26 vac for all TEST SELECT positions except OFF. (0 vac in TEST SELECT: OFF)	
		Connect vom from P2-H to ground. Set for -dc		TEST SELECT: Step through all positions.	Dc vtvm / (on test adapter) / -30 vdc (nominal)	
					Vom / P2-H / -30 vdc for all TEST SELECT positions except OFF. (0 vdc in TEST SELECT: OFF)	
		Connect vom from P2-J to ground. Set for +dc.	S1: +30 VDC/ VSWR	TEST SELECT: Step through all positions.	Dc vtvm / (on test adapter) / +30 vdc (nominal)	
					Vom / P2-J / +30 vdc for all TEST SELECT positions except OFF. (0 vdc in TEST SELECT: OFF)	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
	P2 continuity check (Cont)	Connect vom from P2-M to ground. Set for + dc.	S1: FLAG	TEST SELECT: Step through all positions.	Dc vtvm / (on test adapter) / voltage indication dependent on test adapter R2 setting	
					Vom / P2-M / same as dc vtvm reading for all TEST SELECT positions except OFF. (0 vdc in TEST SELECT: OFF)	
		Connect vom from P2-Y to ground. Set for + dc.	S1: ALT	TEST SELECT: Step through all positions.	Dc vtvm / (on test adapter) / voltage indication dependent on test adapter R1 setting	
					Vom / P2-Y / same as dc vtvm reading for all TEST SELECT positions except OFF. (0 vdc in TEST SELECT: OFF)	

Table 5-2. 980N-1 Altimeter Test Set, Testing and Alignment Procedures (Cont)

STEP	TEST TITLE AND REMARKS	SPECIAL INSTRUCTIONS	APPLICABLE TEST ADAPTER SWITCH POSITIONS	APPLICABLE 980N-1 SWITCH POSITIONS	TEST RESULTS: (METER OR INDICATOR / TEST POINT / RESULT	SPECIAL COMMENTS OR ADJUSTMENTS
	P2-continuity check (Cont)	Turn off all power and disconnect all test equipment from the 980N-1. Only the vom is needed for the remaining tests.	No longer needed			
		Connect vom from P2-a to ground. Set for resistance measurement.		TEST SELECT: AL-101 SELF TEST.	Vom / P2-a / 0 ohm	
				TEST SELECT: VSWR.	Vom / P2-a / 0 ohm	
				TEST SELECT: Step through all positions except AL-101 SELF TEST and VSWR.	Vom / P2-a / open circuit	
		Connect vom from P2-L to ground. Set for resistance measurement.		TEST SELECT: Step through all positions including OFF	Vom / P2-L / 0 ohm	
		Connect vom from P2-Z to ground. Set for resistance measurement.			Vom / P2-Z / 0 ohm	
		Connect vom from P2-A to ground. Set for resistance measurement.			Vom / P2-A / 0 ohm	
		Connect vom from P2-e to ground. Set for resistance measurement.			Vom / P2-A / 0 ohm	

Note

This completes all tests on the 980N-1. Set TEST SELECT switch to OFF position, reinstall the case on the 980N-1 chassis, and store the cable assembly in its normal storage position in the top cover. Return all test equipment to its normal storage location.

5.3 980N-1 TROUBLESHOOTING TECHNIQUES

To troubleshoot any suspected failure in the 980N-1, refer to the functional block diagram (figures 7-2 through 7-6) and determine the circuit that can be causing the improper indication. Once this has been established, refer to the 980N-1 schematic diagram, figure 7-1, and note the inputs to that circuit (primary power and/or signal). Use the block diagrams to trace the power and input signal through the various switch contacts on the equipment. Once it has been established that both primary power and/or signal input is present at the suspected circuit, it becomes a matter of basic solid-state troubleshooting techniques to isolate the problem to one or more discrete components. In the case where a lamp is involved, however, it is always best to first check the lamp before carrying out any more complex troubleshooting procedures.

section 6
parts list

6.1 INTRODUCTION

6.1.1 General

This parts list is a complete list of parts for the equipment manufactured by Collins Radio Company (see figure 6-1).

Periodically the parts list is revised to cover additions, deletions, or changes to the equipment. These revisions are indicated by an R placed to the left of each revised item and apply to the current revision only.

6.1.2 Numerical Index

This index contains an alphanumerical list of all parts listed in the parts list.

a. PART NUMBER Column

In this column are listed part numbers for procurable parts and assemblies in the parts list.

1. Order of Precedence

The order of precedence beginning at the extreme left-hand position in part number numerical arrangement is as follows:

Letters A through Z
Numerals 0 through 9 (Alphabetical O's are considered as numerical zeros.)

The order of precedence in continuing the part number arrangement in second and succeeding positions of the part number from left to right is as follows:

Space (blank column)
Diagonal (slant)/
Point (period).
Dash (-)
Letters A through Z
Numerals 0 through 9 (Alphabetical O's are considered as numerical zeros.)

2. Collins Radio Company Part Numbering System

Collins Radio Company part numbering system is comprised of a three-digit family number, a four-digit serial number, and a two- or three-digit dash number:

FAMILY NO.	SERIAL NO.	DASH NO.
XXX	XXXX	XX or XXX

b. FIG. - ITEM Column

This column lists the parts list figure and item numbers assigned to the associated part numbers.

c. TTL REQ (Total Required) Column

Total quantity of parts or assemblies required at each location is listed in this column.

d. AIRLINE PART NO. Column

Intentionally left blank, for airline use only.

6.1.3 Symbol Index

The symbol index enables the user to locate, by symbol, the part number and the figure and item number of any electrical item that appears on the schematic diagram.

a. SYMBOL Column

This column contains an alphanumerical listing of all symboled items. When the same symbol appears in different units or subassemblies, module symbol prefix designators are used. Where no prefix has been assigned, separate indexes will be given. Prefix designators, if required, will be found in paragraph 6.1.6.

b. FIG. - ITEM Column

The figure and item numbers are used to locate a part in the parts list after it has been located in the symbol index.

c. PART NUMBER Column

This column contains the part number for all symboled items.

6.1.4 Parts List

a. General

The parts list consists of a breakdown of the complete unit into subassemblies and detailed parts. Each assembly is listed in its order of disassembly and is followed immediately by its component parts properly indented to show their relationship to the assembly.

1. FIG. - ITEM Column

Figure and item numbers key the parts breakdown to the applicable illustration. Items in the parts breakdown preceded by a dash (example -1) will not be keyed on the illustration.

2. PART NO. Column

Part numbers listed are MIL part numbers, manufacturer's part numbers, or Collins part numbers. Part numbers for items which are made from raw stock, such as wire, solder, varnish, lacing cord, etc. are not listed.

3. INDENT. Column

Indention is shown by codes indicating item relationship.

4. NOMENCLATURE Column

This column contains a description for each item listed. Reference to the next higher (NHA) is listed as the last item in the nomenclature column. If a part is purchased by Collins Radio Company from a vendor, a Federal Manufacturer's Code number is listed in this column. If this column does not include a Federal Manufacturer's Code Number, the item is either a MIL approved item, commercial item or manufactured by Collins. Where COML appears in this column, the part may be obtained commercially from various vendors. Part numbers appearing in this column are Collins assigned part numbers for that item. Proprietary items are so indicated by the letter P. Serial numbers or MCN (manufacturing control number) effectivities, where applicable, are listed in this column. Serial number effectivities are designated on the nameplate. The MCN is stamped on each module and/or chassis. Changes made from service bulletins are so indicated by SB1, SB2, etc.

5. UNITS PER ASSY. Column

This column contains the number of parts required for each assembly or subassembly. The letters AR denote that the selection of a part or parts should be made as required. REF refers to an assembly which is completely assembled on a preceding illustration.

6. USAGE CODE Column

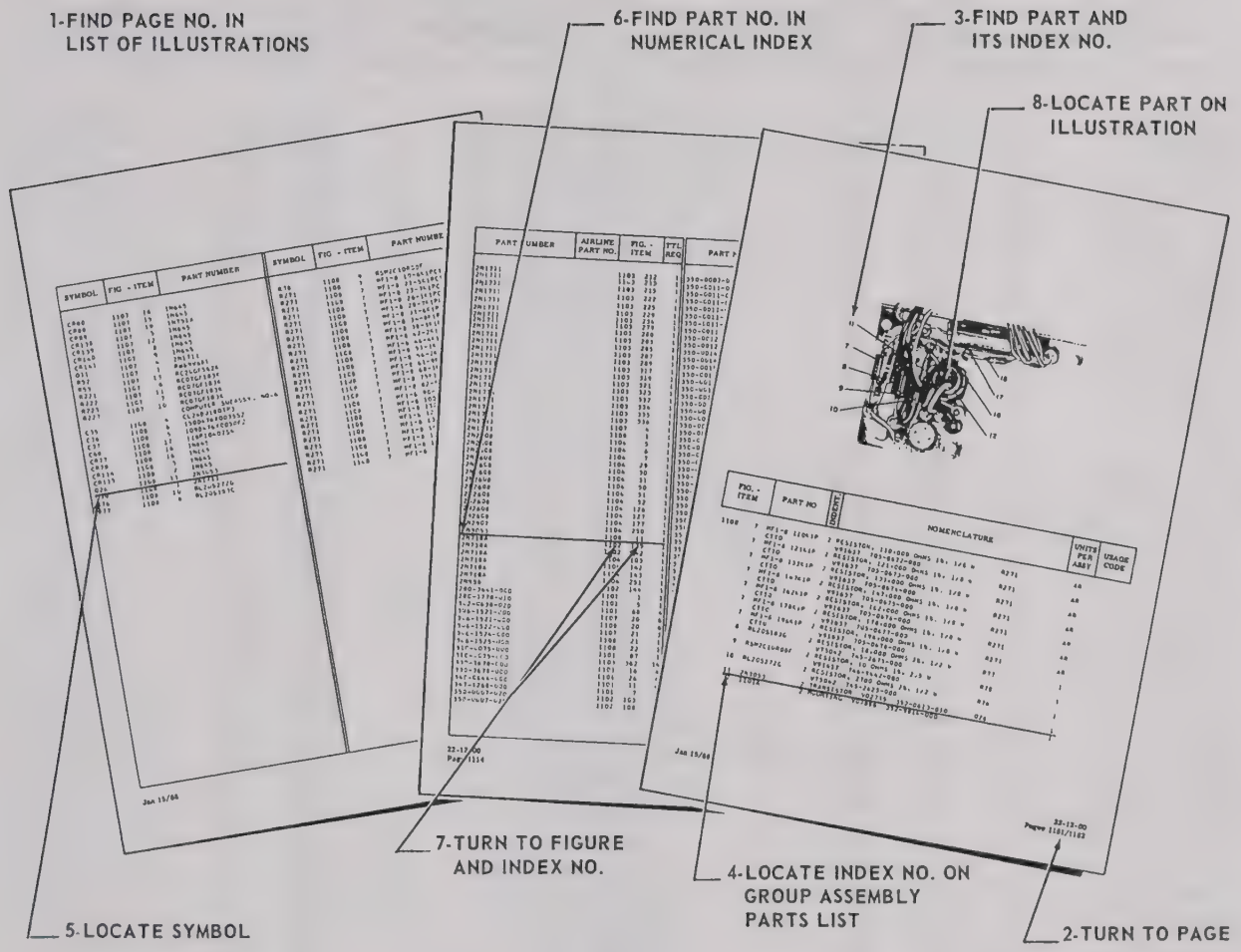
Part variations within different models of the same equipment are indicated in the usage code column. In cases where this column has been left blank, the part listed will apply to all models of equipment covered by this publication. If usage codes are required, see paragraph 6.1.6.

6.1.5 Manufacturer's Code and Name Index

CODE	MANUFACTURER'S NAME AND ADDRESS
02111	Spectrol Electronics Corp. 17070 E. Gale Ave. City of Industry, Calif. 91745
02735	Radio Corp. of America Commercial Receiving Tube and Semiconductor Div. Somerville, N. J. 08876
04009	Arrow-Hart and Hageman Electric Co. 103 Hawthorne St. Hartford, Conn. 06106
07388	Torotel, Inc. 13402 S. 71 Highway Grandview, Mo. 64030
08289	Blinn Delbert Co., Inc. 1678 E. 5th Ave. Pomona, Calif. 91769
08806	General Electric Co. Miniature Lamp Dept. Nela Park Cleveland, Ohio 44112
08817	Electralab Printed Electronics Corp. New Bedford Industrial Park New Bedford, Mass. 02745
10646	Carborundum Co. Buffalo Ave. Niagara Falls, N. Y. 14302
12615	U. S. Terminal, Inc. 7504 Camargo Cincinnati, Ohio 45243
13508	Hawkeye Rubber Mfg. Co. 917 Shaver Rd. N. E. Cedar Rapids, Ia. 52402
21192	Excelsior Hardware Co. 39 Woodland Ave. Stamford, Conn. 06075
21242	American Electronics Components Corp. P.O. Box 27087 Cincinnati, Ohio 45227
27545	Hartford Steel Ball Co. 1022 Elm St. Rocky Hill, Conn. 06067
46384	Penn Engineering and Mfg. Corp. Old Easton Highway Doylestown, Pa. 18901
56289	Sprague Electric Co. North Adams, Mass. 01247
61957	United Shoe Machinery Corp. Boston, Mass. 02100
72794	Dzus Fastener Co. Inc. 125 Union St. West Islip, N. Y. 11795
72962	Elastic Stop Nut Corp. of America 2330 Vauxhall Rd. Union, N. J. 07083
75543	Lavelle Rubber Co. 424 N. Wood Chicago, Ill. 60622
76854	Oak Mfg. Co. S. Main Crystal Lake, Ill. 60014
77147	Patton MacGuyer Co. Edgewood Station Providence, R. I. 02905
77250	Pheoll Mfg. Co. Chicago, Ill. 60600
77820	Bendix Corp. Scintilla Div. Sidney, N. Y. 13838

CODE	MANUFACTURER'S NAME AND ADDRESS
78189	Shakeproof Div. of Illinois Tool Works Inc. St. Charles Rd. Elgin, Ill. 60120
79963	Zierick Mfg. Corp. 83 Rockdale Ave. New Rochelle, N. Y. 10801
80033	Prestole Fastener Div. Bishop and Babcock Corp. Toledo, Ohio 43600
80223	United Transformer Co. 150 Varick St. New York, N. Y. 10013
82567	Reeves Hoffman Cherry-North Sts. Carlisle, Pa. 17013
91506	Augat, Inc. 33 Perry Ave. Attleboro, Mass. 02703
91637	Dale Electronics, Inc. P. O. Box 609 Columbus, Nebr 68601
94916	Wac Line Inc. 35 S. St. Clair St. Dayton, Ohio 45402
95263	Leecraft Mfg. Co. Inc. 21-16 44th Rd. Long Island City, N. Y. 11101
96791	Amphenol Corp. Amphenol Control Div. 120 S. Main St. Jamesville, Wis. 53545
98291	Sealectro Corp. 225 Hoyt Mamaroneck, N.Y. 10544
98978	International Electronic Research Corp. 151 West Magnolia Ave. Burbank, Calif. 91502
99378	Atlee Corp. 2 Lowell Ave. Winchester, Mass. 01890

How to Use This Illustrated Parts List


1-FIND PAGE NO. IN LIST OF ILLUSTRATIONS
6-FIND PART NO. IN NUMERICAL INDEX
3-FIND PART AND ITS INDEX NO.
8-LOCATE PART ON ILLUSTRATION
7-TURN TO FIGURE AND INDEX NO.
4-LOCATE INDEX NO. ON GROUP ASSEMBLY PARTS LIST
5-LOCATE SYMBOL
2-TURN TO PAGE

HOW TO FIND THE PART NUMBER IF THE SECTION OR SYSTEM OF THE EQUIPMENT IN WHICH THE PART IS USED IS KNOWN:

(1) Turn to the List of Illustrations and find the page number for the Major Assembly or System in which the part is used.

(2) Turn to the page determined in step (1).

(3) Locate the part and its index number on the illustration.

(4) Find the index number on the Group Assembly Parts List page to determine complete description.

(5) If the reference designation symbol is known, refer to the Symbol Index to find the part number.

HOW TO FIND THE ILLUSTRATION FOR A PART IF THE PART NUMBER IS KNOWN:

(6) Refer to the Numerical Index and find the part number.

(7) Turn to the Group Assembly Parts List and find the first figure and index number indicated in the Numerical Index for that part. If this figure shows the part in a section or system of the equipment other than the one desired, refer to the other figure numbers listed in the Numerical Index.

(8) On the face of the illustration, find the index number determined in step (7).

6.2 NUMERICAL INDEX

PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
AN3057-12	6-1	5	1
AN3420-10	6-1	6	1
AN3420-12	6-1	7	1
AN3420-16	6-1	8	1
CL23CJ1R5TN3	6-2	30	1
CM05F101J03	6-2	85	1
CM05F201J03	6-2	18	1
CM06FO32J03	6-2	106	1
CM06F272J03	6-2	13	1
CM06F332J03	6-2	93	1
CM06F472J03	6-2	7	1
CM06F472J03	6-3	11	1
CM06F472J03	6-3	12	1
CM07F682J03	6-3	15	1
CS13BF476M	6-3	77	1
DL644	6-3	5	1
DP439-433RED	6-2	142	3
DP439-433WHT	6-3	99	22
DP439-433WHT	6-2	141	31
E50008-051	6-1	39	1
F12NCFMA2-62	6-1	72	4
E50008-051	6-3	92	1
F12NCFMA2-62	6-1	93	6
F632-1	6-1	75	8
LT4K307	6-2	40	1
MS16535-153	6-3	93	1
MS16535-154	6-1	80	6
MS16535-76	6-2	3	6
MS16535-76	6-2	6	2
MS16535-77	6-1	88	2
MS18209-387	6-1	65	5
MS20426AD4-4	6-1	78	8
MS20426AD4-4	6-1	82	4
MS3116E18-32	6-1	9	1
MS35337-77	6-1	22	4
MS35337-96	6-3	102	12
MS35337-96	6-2	139	14
MS51957-15	6-1	85	2
MS51957-27	6-1	19	6
MS51957-27	6-3	96	4
MS51957-28	6-1	12	5
MS51957-28	6-1	15	5
MS51957-28	6-1	17	2
MS51957-30	6-1	38	4
MS51957-34	6-1	57	4
MS51957-4	6-1	21	4
MS51957-4	6-3	8	1
MS51957-4	6-3	18	1
MS51957-70	6-3	57	2
MW375-118	6-2	44	1
M426	6-2	137	14
M426	6-3	100	12
PT06A18-32P	6-1	4	1
P313-0051-000	6-3	40	2
P313-0064-000	6-1	50	1
P313-0064-000	6-1	52	1
P334-0278-000	6-2	138	14
P334-0278-000	6-3	101	12
P342-0053-000	6-1	26	1
P343-0005-000	6-3	56	4
P343-0286-000	6-3	44	2
P343-0618-000	6-4	15	1
P347-0006-000	6-1	41	1
P347-1270-000	6-1	3	2
RC07GF100K	6-2	80	1
RC07GF100K	6-2	89	1
RC07GF101K	6-2	97	1
RC07GF101K	6-2	111	1
RC07GF102K	6-2	10	1
RC07GF102K	6-3	27	1
RC07GF103K	6-3	87	1
RC07GF103K	6-2	16	1
RC07GF103K	6-2	33	1
RC07GF103K	6-2	53	1
RC07GF103K	6-2	62	1
RC07GF103K	6-2	69	1
RC07GF103K	6-2	87	1
RC07GF103K	6-2	88	1
RC07GF103K	6-2	101	1
RC07GF103K	6-2	114	1
RC07GF103K	6-2	118	1
RC07GF103K	6-2	125	1
RC07GF103K	6-2	131	1
RC07GF153K	6-2	28	1
RC07GF153K	6-2	86	1
RC07GF153K	6-2	112	1
RC07GF183K	6-3	29	1
RC07GF223K	6-3	86	1
RC07GF223K	6-2	37	1
RC07GF223K	6-2	104	1
RC07GF272K	6-2	12	1
RC07GF273K	6-2	27	1
RC07GF273K	6-3	23	1
RC07GF330K	6-2	103	1
RC07GF333K	6-2	117	1
RC07GF333K	6-2	124	1
RC07GF333K	6-2	130	1
RC07GF333K	6-3	30	1
RC07GF392K	6-3	3	1
RC07GF393K	6-3	78	1
RC07GF471K	6-2	20	1
RC07GF472K	6-2	39	1
RC07GF472K	6-2	50	1
RC07GF472K	6-2	60	1
RC07GF472K	6-2	68	1
RC07GF472K	6-3	28	1
RC07GF472K	6-3	31	1
RC07GF473K	6-2	15	1
RC07GF473K	6-2	38	1
RC07GF473K	6-2	49	1

PART NUMBER	FIG. - ITEM		TTL REQ	AIRLINE PART NO.
RC07GF473K	6-2	57	1	
RC07GF473K	6-2	67	1	
RC07GF473K	6-3	13	1	
RC07GF474K	6-2	32	1	
RC07GF681K	6-3	88	1	
RC07GF821K	6-2	31	1	
RC07GF822K	6-3	1	1	
RC20GF101K	6-2	23	1	
RC20GF121K	6-2	132	1	
RC20GF121K	6-2	133	1	
RC20GF121K	6-2	134	1	
RC20GF121K	6-4	8	1	
RC20GF121K	6-4	10	1	
RC20GF390K	6-3	48	1	
RC32GF182K	6-3	61	1	
RH289-7072-010	6-2	1	1	
RH289-7072-020	6-2	42	1	
RH289-7072-030	6-2	41	1	
RN60C1213F	6-3	70	1	
RN60C1472F	6-3	65	1	
RN60C1472F	6-3	76	1	
RN60C4222F	6-3	69	1	
RN60C4641F	6-3	68	1	
RN60D1001F	6-2	75	AR	
RN60D1001F	6-3	52	1	
RN60D1101F	6-2	75	AR	
RN60D1103F	6-1	70	1	
RN60D1470F	6-3	82	1	
RN60D1960F	6-3	9	1	
RN60D2152F	6-4	4	1	
RN60D2490F	6-2	72	1	
RN60D2611F	6-3	34	1	
RN60D2871F	6-4	11	1	
RN60D3160F	6-2	95	1	
RN60D3160F	6-2	108	1	
RN60D3650F	6-2	116	1	
RN60D4643F	6-1	69	1	
RN60D4871F	6-2	78	1	
RN60D4871F	6-2	92	1	
RN60D5110F	6-3	14	1	
RN60D5110F	6-3	80	1	
RN60D5111F	6-3	85	1	
RN60D5621F	6-3	10	1	
RN60D6190F	6-2	75	AR	
RN60D6810F	6-2	75	AR	
RN60D7500F	6-2	75	AR	
RN60D7870F	6-2	75	AR	
RN60D8250F	6-2	75	AR	
RN60D9090F	6-2	75	AR	
RN65C2871F	6-3	24	1	
RN65C2871F	6-3	74	1	
RN65D2871F	6-3	50	1	
RS1-2-2R00F	6-3	83	1	
RS1-2-2R00F	6-3	84	1	
RT22C2L102	6-3	67	1	

PART NUMBER	FIG. - ITEM		TTL REQ	AIRLINE PART NO.
RT22C2L203	6-3	62	1	
RT22C2L500	6-3	66	1	
RT22C2L501	6-3	59	1	
RT22C2L501	6-3	63	1	
RW69V221	6-2	26	1	
RW69V471	6-2	19	1	
SE34PLAIN	6-1	74	6	
SKT5BCRED	6-2	81	1	
SKT5BCRED	6-2	82	1	
SKT5BCRED	6-2	83	1	
SKT5BCRED	6-2	84	1	
SKT5BCRED	6-3	19	1	
SKT5BCRED	6-3	20	1	
SKT5BCRED	6-3	21	1	
SKT5BCRED	6-3	22	1	
SKT5BCRED	6-4	5	1	
SKT5BCRED	6-4	6	1	
SKT5BCRED	6-4	7	1	
SL304-301RED	6-2	143	6	
SL304-301WHT	6-2	140	82	
SL304-301WHT	6-3	98	42	
SL304-301WHT	6-4	12	32	
S3-225CHROMATE	6-1	87	1	
TW115-147	6-3	39	1	
TXB2P032-037-3B	6-2	43	1	
T1532	6-2	135	15	
T1532	6-3	103	9	
T1533	6-2	136	3	
012-5010-010	6-1	89	1	
015-3162-010	6-1	54	1	
1-8SSBALLTYPE440GR100	6-1	31	1	
1N3026B	6-2	77	1	
1N3026B	6-2	91	1	
1N3064	6-2	35	1	
1N3064	6-2	47	1	
1N3064	6-2	51	1	
1N3064	6-2	52	1	
1N3064	6-2	58	1	
1N3064	6-2	59	1	
1N3064	6-2	61	1	
1N3064	6-2	64	1	
1N3064	6-2	66	1	
1N3064	6-2	71	1	
1N3064	6-2	94	1	
1N3064	6-2	100	1	
1N3064	6-2	107	1	
1N3064	6-2	115	1	
1N3064	6-2	121	1	
1N3064	6-2	122	1	
1N3064	6-2	128	1	
1N3064	6-4	1	1	
1N3064	6-4	2	1	
1N3064	6-4	3	1	
1N3064	6-4	9	1	
1N4002	6-3	46	1	

PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
1N4002	6-3 47	1	
1N4370	6-2 76	1	
1N645	6-2 46	1	
1N645	6-2 48	1	
1N645	6-2 56	1	
1N645	6-2 65	1	
1N645	6-2 123	1	
1N645	6-2 129	1	
1N645	6-3 4	1	
1N645	6-3 53	1	
1N645	6-3 54	1	
1N751A	6-3 49	1	
1N938A	6-3 64	1	
1N965A	6-2 54	1	
1N965A	6-2 63	1	
1N965A	6-2 70	1	
1N969B	6-2 105	1	
100-206-2	6-2 2	3	
150D105X0035A2	6-2 36	1	
150D105X0035A2	6-2 102	1	
150D155X0035B2	6-2 29	1	
150D225X0020A2	6-2 11	1	
150D226X0035R2	6-2 21	1	
150D226X0035R2	6-2 22	1	
150D334X0035A2	6-2 8	1	
150D336X0035S2	6-2 24	1	
150D475X0035B2	6-3 32	1	
150D475X0035B2	6-3 35	1	
150D475X0035B2	6-3 36	1	
150D685X0035B2	6-3 2	1	
150D685X0035B2	6-3 33	1	
16864	6-3 94	1	
1720-02CADPL	6-1 53	1	
1822	6-1 29	1	
1904-00	6-3 41	2	
2-00-1SPEC	6-1 32	1	
2N1711	6-2 9	1	
2N1711	6-2 14	1	
2N1711	6-2 17	1	
2N1711	6-2 45	1	
2N1711	6-2 55	1	
2N1711	6-2 96	1	
2N1711	6-2 98	1	
2N1711	6-2 109	1	
2N1711	6-2 119	1	
2N1711	6-2 120	1	
2N1711	6-2 126	1	
2N1711	6-2 127	1	
2N1711	6-3 25	1	
2N1711	6-3 26	1	
2N1711	6-3 75	1	
2N1711	6-3 81	1	
2N1711	6-3 89	1	
2N1711	6-3 90	1	
2N2223	6-3 71	1	

PART NUMBER	FIG. - ITEM	TTL REQ	AIRLINE PART NO.
2N2540	6-2 34	1	
2N2540	6-2 99	1	
2N2540	6-2 113	1	
2N2905A	6-2 79	1	
2N2905A	6-2 90	1	
2N2905A	6-2 110	1	
2N2905A	6-3 37	1	
2N2905A	6-3 60	1	
2N3054	6-3 38	1	
2N657A	6-2 25	1	
200-5021-000	6-1 95	4	
260096LK4	6-1 47	1	
260097AF1	6-1 46	1	
261152BF2	6-1 45	1	
266-5375-020	6-1 67	1	
266-5375-020	6-1 68	1	
3	6-1 90	1	
310-0075-000	6-3 58	6	
310-6340-000	6-1 25	1	
328-0013-000	6-1 35	2	
328-0013-000	6-1 44	8	
381-1845-010	6-1 36	1	
4007-4HOTTINNED	6-3 97	1	
403	6-1 48	2	
4402 1/2	6-1 81	2	
458-0815-010	6-1 55	1	
504-0729-000	6-3 43	1	
522-4610-001	6-1 9	1	
533-102	6-3 72	1	
533-302	6-3 73	1	
541-6029-002	6-1 58	4	
545-7544-003	6-3 42	2	
547-5305-002	6-4 13	1	
554-2150-002	6-3 16	1	
554-2164-003	6-3 6	1	
600D306G040KD4	6-3 45	1	
600D306G040KD4	6-3 51	1	
600D217G040DL4	6-2 4	1	
6002-4A	6-2 5	1	
601D437G040JE4	6-3 91	1	
68NM26	6-3 7	1	
68NM26	6-3 17	1	
68NM62	6-3 95	4	
68NM62	6-4 14	1	
68-1660-40	6-1 24	1	
68-1660-40	6-1 40	1	
68NM26	6-1 2	2	
68NM40	6-1 84	2	
68NM62	6-1 11	2	
68NM62	6-1 14	2	
68NM62	6-1 56	4	
68NM62	6-1 94	4	
750-3001-030	6-1 49	1	
756-7045-002	6-3 55	3	
757-0232-002	6-1 34	2	

PART NUMBER	FIG. - ITEM		TTL REQ	AIRLINE PART NO.
757-0233-002	6-1	43	3	
757-9537-000	6-1	1	1	
763F18	6-2	73	1	
763F18	6-2	74	1	
768-9005-001	6-1	10	1	
768-9005-001	6-2	0	REF	
768-9006-001	6-2	144	1	
768-9009-001	6-3	0	REF	
768-9009-001	6-1	13	1	
768-9010-001	6-3	104	1	
772-0692-001	6-1	86	1	
772-0900-001	6-1	18	1	
772-0901-001	6-1	71	1	
772-0902-001	6-1	91	1	
772-0903-001	6-1	92	1	
772-0904-001	6-1	96	1	
772-0905-001	6-1	77	1	
772-0906-001	6-1	76	1	
772-0908-001	6-1	37	1	
772-0909-001	6-4	0	REF	
772-0909-001	6-1	16	1	

PART NUMBER	FIG. - ITEM		TTL REQ	AIRLINE PART NO.
772-0911-001	6-4	16	1	
772-0914-001	6-1	79	1	
772-0915-001	6-1	42	1	
772-0916-001	6-1	83	2	
772-8754-001	6-1	27	1	
772-8755-001	6-1	30	1	
772-8756-001	6-1	23	1	
772-8757-001	6-1	28	1	
772-8758-001	6-1	33	1	
772-8928-001	6-1	20	1	
772-8995-001	6-1	73	1	
855QA	6-1	60	1	
855QA	6-1	61	1	
855QA	6-1	63	1	
855QA	6-1	64	1	
855QR	6-1	62	1	
855S1	6-1	66	5	
911	6-1	59	1	
930-5020	6-1	51	1	
96P2230IS4	6-3	79	1	

6.3 SYMBOL INDEX

SYMBOL	FIG. - ITEM		PART NUMBER
CR1	6-4	1	1N3064
CR1	6-2	46	1N645
CR1	6-3	4	1N645
CR2	6-3	54	1N645
CR2	6-2	47	1N3064
CR2	6-4	2	1N3064
CR3	6-3	53	1N645
CR3	6-2	51	1N3064
CR4	6-2	48	1N645
CR4	6-3	46	1N4002
CR4	6-4	9	1N3064
CR5	6-3	47	1N4002
CR5	6-2	58	1N3064
CR5	6-4	3	1N3064
CR6	6-2	52	1N3064
CR7	6-2	129	1N645
CR8	6-2	128	1N3064
CR9	6-2	61	1N3064
CR10	6-2	56	1N645
CR11	6-2	64	1N3064
CR12	6-2	59	1N3064
CR13	6-2	123	1N645
CR14	6-2	122	1N3064
CR15	6-2	121	1N3064
CR16	6-2	65	1N645
CR17	6-2	71	1N3064
CR18	6-2	66	1N3064
CR19	6-2	107	1N3064
CR20	6-2	94	1N3064
CR21	6-2	115	1N3064
CR22	6-2	100	1N3064
CR23	6-2	35	1N3064
C1	6-3	15	CM07F682J03
C1	6-2	36	150D105X0035A2
C2	6-2	8	150D334X0035A2
C2	6-3	11	CM06F472J03
C3	6-2	7	CM06F472J03
C3	6-3	12	CM06F472J03
C4	6-2	13	CM06F272J03
C4	6-3	35	150D475X0035B2
C5	6-2	11	150D225X0020A2
C5	6-3	32	150D475X0035B2
C6	6-3	2	150D685X0035B2
C7	6-3	33	150D685X0035B2
C8	6-2	106	CM06F032J03
C8	6-3	36	150D475X0035B2
C9	6-2	93	CM06F332J03
C9	6-3	45	600D306G040KD4
C10	6-2	18	CM05F201J03
C10	6-3	51	600D306G040KD4
C11	6-2	21	150D226X0035R2
C11	6-3	91	601D437G040JE4
C12	6-2	22	150D226X0035R2
C13	6-2	29	150D155X0035B2
C13	6-3	77	CS13BF476M
C14	6-2	24	150D336X0035S2
C14	6-3	79	96P22301S4
C15	6-2	4	600D217G040DL4
C16	6-2	102	150D105X0035A2
C17	6-2	85	CM05F101J03
C18	6-2	30	CL23CJ1R5TN3
DS1	6-1	60	855QA
DS2	6-1	61	855QA
DS3	6-1	62	855QR
DS4	6-1	63	855QA
DS5	6-1	64	855QA
DS6	6-1	20	772-8928-001
J1	6-2	83	SKT5BCRED
J1	6-3	22	SKT5BCRED
J1	6-4	5	SKT5BCRED
J2	6-2	84	SKT5BCRED
J2	6-3	21	SKT5BCRED
J2	6-4	6	SKT5BCRED
J3	6-2	82	SKT5BCRED
J3	6-3	20	SKT5BCRED
J3	6-4	7	SKT5BCRED
J4	6-2	81	SKT5BCRED
J4	6-3	19	SKT5BCRED
L1	6-2	40	LT4K307
L1	6-3	5	DL644
M1	6-1	55	458-0815-010
P1	6-1	4	PT06A18-32P
P2	6-1	9	MS3116E18-32
Q1	6-2	45	2N1711
Q1	6-3	25	2N1711
Q2	6-2	55	2N1711
Q2	6-3	26	2N1711
Q3	6-2	127	2N1711
Q3	6-3	90	2N1711
Q4	6-2	126	2N1711
Q4	6-3	89	2N1711
Q5	6-2	120	2N1711
Q5	6-3	37	2N2905A
Q6	6-2	119	2N1711
Q6	6-3	38	2N3054
Q6	6-3	39	TW115-147
Q7	6-2	9	2N1711
Q7	6-3	60	2N2905A
Q8	6-2	109	2N1711
Q8A	6-3	71	2N2223
Q8B	6-3	71	2N2223
Q9	6-2	79	2N2905A
Q9	6-3	75	2N1711
Q10	6-2	90	2N2905A
Q10	6-3	81	2N1711
Q11	6-2	96	2N1711
Q12	6-2	113	2N2540
Q13	6-2	99	2N2540
Q14	6-2	14	2N1711
Q15	6-2	17	2N1711
Q16	6-2	34	2N2540
Q17	6-2	25	2N657A
Q18	6-2	98	2N1711
Q19	6-2	110	2N2905A
RT1	6-2	73	763F18
RT2	6-2	74	763F18
R1	6-2	49	RC07GF473K
R1	6-1	51	930-5020
R1	6-3	24	RN65C2871F
R1	6-4	11	RN60D2871F
R2	6-1	49	750-3001-030
R2	6-2	50	RC07GF472K
R2	6-3	30	RC07GF333K
R2	6-4	4	RN60D2152F

SYMBOL	FIG. - ITEM	PART NUMBER
R3	6-1 36	381-1845-010
R3	6-2 131	RC07GF103K
R3	6-3 31	RC07GF472K
R3	6-4 10	RC20GF121K
R4	6-1 69	RN60D4643F
R4	6-2 53	RC07GF103K
R4	6-3 13	RC07GF473K
R4	6-4 8	RC20GF121K
R5	6-1 70	RN60D1103F
R5	6-2 130	RC07GF333K
R5	6-3 1	RC07GF822K
R6	6-2 57	RC07GF473K
R6	6-3 85	RN60D5111F
R7	6-2 60	RC07GF472K
R7	6-3 86	RC07GF223K
R8	6-2 125	RC07GF103K
R8	6-3 80	RN60D5110F
R9	6-2 62	RC07GF103K
R9	6-3 10	RN60D5621F
R10	6-2 124	RC07GF333K
R10	6-3 23	RC07GF273K
R11	6-2 67	RC07GF473K
R12	6-2 68	RC07GF472K
R12	6-3 28	RC07GF472K
R13	6-2 118	RC07GF103K
R13	6-3 27	RC07GF102K
R14	6-2 69	RC07GF103K
R14	6-3 29	RC07GF183K
R15	6-2 117	RC07GF333K
R15	6-3 88	RC07GF681K
R16	6-2 10	RC07GF102K
R16	6-3 3	RC07GF392K
R17	6-2 38	RC07GF473K
R17	6-3 87	RC07GF103K
R18	6-2 39	RC07GF472K
R18	6-3 34	RN60D2611F
R19	6-2 37	RC07GF223K
R19	6-3 78	RC07GF393K
R20	6-2 12	RC07GF272K
R20	6-3 62	RT22C2L203
R21	6-3 14	RN60D5110F
R22	6-3 61	RC32GF182K
R23	6-2 112	RC07GF153K
R23	6-3 48	RC20GF390K
R24	6-2 111	RC07GF101K
R24	6-3 74	RN65C2871F
R25	6-2 108	RN60D3160F
R25	6-3 68	RN60C4641F
R26	6-2 116	RN60D3650F
R26	6-3 69	RN60C4222F
R27	6-2 95	RN60D3160F
R27	6-3 73	533-302
R28	6-2 97	RC07GF101K
R28	6-3 50	RN65D2871F
R29	6-2 86	RC07GF153K
R29	6-3 70	RN60C1213F
R30	6-2 78	RN60D4872F
R30	6-3 65	RN60C1472F
R31	6-2 72	4N60D2490F
R31	6-3 76	RN60C1472F
R32	6-2 92	RN60D4871F
R32	6-3 67	RT22C2L102
R33	6-2 80	RC07GF100K

SYMBOL	FIG. - ITEM	PART NUMBER
R33	6-3 66	RT22C2L500
R34	6-3 82	RN60D1470F
R35	6-2 89	RC07GF100K
R35	6-3 84	RS1-2-2R00F
R36	6-2 75	RN60D9090F
R36	6-2 75	RN60D6190F
R36	6-2 75	RN60D6810F
R36	6-2 75	RN60D7500F
R36	6-2 75	RN60D7870F
R36	6-2 75	RN60D8250F
R36	6-2 75	RN60D1001F
R36	6-2 75	RN60D1101F
R36	6-3 83	RS1-2-2R00F
R37	6-2 114	RC07GF103K
R37	6-3 72	533-102
R38	6-2 101	RC07GF103K
R38	6-3 52	RN60D1001F
R39	6-2 16	RC07GF103K
R39	6-3 59	RT22C2L501
R40	6-2 19	RW69V471
R41	6-2 27	RC07GF273K
R41	6-3 63	RT22C2L501
R42	6-2 26	RW69V221
R42	6-3 9	RN60D1960F
R43	6-2 31	RC07GF821K
R44	6-2 20	RC07GF471K
R45	6-2 15	RC07GF473K
R46	6-2 33	RC07GF103K
R47	6-2 32	RC07GF474K
R48	6-2 28	RC07GF153K
R49	6-2 23	RC20GF101K
R50	6-2 103	RC07GF330K
R51	6-2 104	RC07GF223K
R52	6-2 87	RC07GF103K
R53	6-2 88	RC07GF103K
R54	6-2 132	RC20GF121K
R55	6-2 133	RC20GF121K
R56	6-2 134	RC20GF121K
S1	6-1 68	266-5375-020
S2	6-1 67	266-5375-020
S3	6-1 47	260096LK4
S4	6-1 46	260097AF1
S5	6-1 45	261152BF2
TB1	6-1 10	768-9005-001
TB1	6-2 0	768-9005-001
TB2	6-1 13	768-9009-001
TB2	6-3 0	768-9009-001
TB3	6-1 16	772-0909-001
TB3	6-4 0	772-0909-001
T1	6-3 94	16864
VR1	6-2 54	1N965A
VR1	6-3 49	1N751A
VR2	6-2 63	1N965A
VR2	6-3 64	1N938A
VR3	6-2 70	1N965A
VR4	6-2 76	1N4370
VR5	6-2 105	1N969B
VR6	6-2 77	1N3026B
VR7	6-2 91	1N3026B
Y1	6-2 1	RH289-7072-010
Y2	6-2 42	RH289-7072-020
Y3	6-2 41	RH289-7072-030

6.4 PARTS LIST

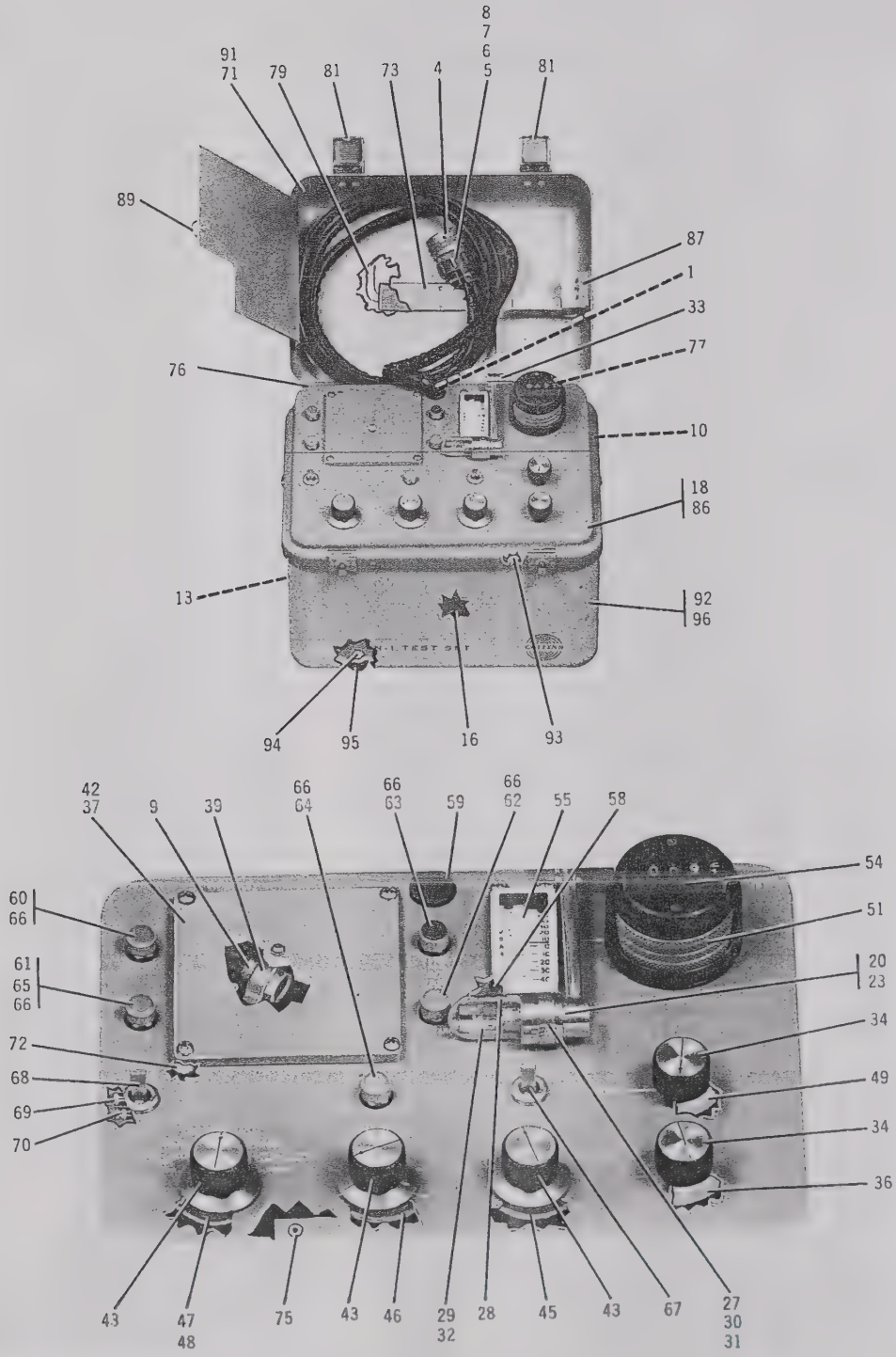


Figure 6-1. 980N-1 Altimeter Test Set

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
6-1 - 0	522-4610-001	1	980N-1 ALTIMETER TEST SET		1	
1	757-9537-000	2	PLATE, IDENT		1	
- 2	68NM26	2	NUT, SELF-LKG, HEX., AL, 2-56 72962 333-0327-000 AP		2	
- 3	P347-1270-000	2	SCREW, MACH., SST, PAN HD, 2-56 X 1/4 77250 347-1270-000 AP		2	
4	PT06A18-32P	2	CONNECTOR 77820 371-2430-000	P1	1	
5	AN3057-12	2	CLAMP 357-8005-000		1	
6	AN3420-10	2	BUSHING 357-8437-000		1	
7	AN3420-12	2	BUSHING 357-8438-000		1	
8	AN3420-16	2	BUSHING 357-8439-000		1	
9	MS3116E18-32	2	CONNECTOR 371-2244-000	P2	1	
10	768-9005-001	2	TERMINAL BOARD, NO. 1 SEE FIG. 6-2-0	TB1	1	
- 11	68NM62	2	NUT, SELF-LKG, HEX., AL, 6-32 72962 333-0368-000 AP		2	
- 12	MS51957-28	2	SCREW, MACH., SST, PAN HD, 6-32 X 3/8 343-0169-000 AP		5	
13	768-9009-001	2	TERMINAL BOARD, NO. 2 SEE FIG. 6-3-0	TB2	1	
- 14	68NM62	2	NUT, SELF-LKG, HEX., AL, 6-32 72962 333-0368-000 AP		2	
- 15	MS51957-28	2	SCREW, MACH., SST, PAN HD, 6-32 X 3/8 343-0169-000 AP		5	
16	772-0909-001	2	TERMINAL BOARD, NO. 3 SEE FIG. 6-4-0	TB3	1	
- 17	MS51957-28	2	SCREW, MACH., SST, PAN HD, 6-32 X 3/8 343-0169-000 AP		2	
18	772-0900-001	2	PANEL, COVER		1	
- 19	MS51957-27	2	SCREW, MACH., SST, PAN HD, 6-32 X 5/16 343-0168-000 AP		6	
20	772-8928-001	3	LIGHT	DS6	1	
- 21	MS51957-4	3	SCREW, MACH., SST, PAN HD, 2-56 X 5/16 343-0125-000 AP		4	
- 22	MS35337-77	3	WASHER, LOCK, SST, 0.097 ID, 0.165 OD 310-0070-000 AP		4	
23	772-8756-001	4	LAMPHOLDER		1	
- 24	68-1660-40	4	NUT, SELF-LKG, HEX., AL, 4-40 72962 333-0605-000 AP		1	
- 25	310-6340-000	4	WASHER, FLAT, SST, 0.125 ID, 0.281 OD COML AP		1	
- 26	P342-0053-000	4	SCREW, MACH., STL, 4-40 X 1-1/8 77250 342-0053-000 AP		1	
27	772-8754-001	4	SPACER		1	
28	772-8757-001	4	REFLECTOR, LIGHT		1	
29	1822	4	LAMP 08806 262-0353-000		1	
30	772-8755-001	4	SNAP RING		1	
31	1-8SSBALLTYPE440GR100	4	BEARING 27545 309-0019-000		1	
32	2-00-1SPEC	4	SOCKET 95263 262-2243-010		1	
33	772-8758-001	4	LAMP ASSY		1	
34	757-0232-002	3	KNOB, RD		2	
- 35	328-0013-000	3	SETSCREW, CAD. PL STL, 8-32 X 1/4 COML AP		2	

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
6-1 36	381-1845-010	3	RESISTOR, VAR, 10,000 OHMS 5%, 1.5 W 02111	R3	1	
37	772-0908-001	3	PLATE, COVER		1	
- 38	MS51957-30	3	SCREW, MACH., SST, PAN HD, 6-32 X 1/2 343-0171-000 AP		4	
39	E50008-051	4	RETAINER 80033 139-0090-000		1	
- 40	68-1660-40	4	NUT, SELF-LKG, HEX., AL, 4-40 72962 333-0605-000 AP		1	
- 41	P347-0006-000	4	SCREW, MACH., SST, FIL H, 4-40 X 1/4 77250 347-0006-000 AP		1	
42	772-0915-001	4	COVER, INDICATOR CUTOUT		1	
43	757-0233-002	3	KNOB, RD		3	
- 44	328-0013-000	3	SETSCREW, CAD. PL STL, 8-32 X 1/4 COML AP		8	
45	261152BF2	3	SWITCH 76854 259-2591-010	S5	1	
46	260097AF1	3	SWITCH 76854 259-2590-010	S4	1	
47	260096LK4	3	SWITCH 76854 259-2589-010	S3	1	
48	403	3	TERMINAL 79963 304-1089-000		2	
49	750-3001-030	3	RESISTOR, VAR, 10,000 OHMS 10%, 2 W	R2	1	
- 50	P313-0064-000	3	NUT, PLAIN, HEX., SST, 3/8-32 77250 313-0064-000 AP		1	
51	930-5020	3	RESISTOR, VAR, 10,000 OHMS 5%, 8 W 02111 377-8001-010	R1	1	
- 52	P313-0064-000	3	NUT, PLAIN, HEX., SST, 3/8-32 77250 313-0064-000 AP		1	
- 53	1720-02CADPL	3	WASHER, LOCK, CAD. PL STL, 0.391 ID, 0.507 OD 78189 373-0085-000 AP		1	
54	15-3162-010	3	DIAL, COUNTING 96791		1	
55	458-0815-010	3	AMMETER, DC 94916	M1	1	
- 56	68NM62	3	NUT, SELF-LKG, HEX., AL, 6-32 72962 333-0368-000 AP		4	
- 57	MS51957-34	3	SCREW, MACH., SST, PAN HD, 6-32 X 1 343-0176-000 AP		4	
58	541-6029-002	3	SPACER, SLV		4	
59	911	3	GROMMET 75543 201-1080-001		1	
60	855QA	3	LENS 08817 262-2212-220	DS1	1	
61	855QA	3	LENS 08817 262-2212-220	DS2	1	
62	855QR	3	LENS 08817 262-2212-180	DS3	1	
63	855QA	3	LENS 08817 262-2212-220	DS4	1	
64	855QA	3	LENS 08817 262-2212-220	DS5	1	
65	MS18209-387	3	LAMP 262-0179-010		5	
66	855S1	3	LENS 08817 262-2212-020		5	
67	266-5375-020	3	SWITCH, TOGGLE 04009	S2	1	
68	266-5375-020	3	SWITCH, TOGGLE 04009	S1	1	
69	RN60D4643F	3	RESISTOR, FXD, 464,000 OHMS 1%, 1/4 W 705-6724-000	R4	1	
70	RN60D1103F	3	RESISTOR, FXD, 110,000 OHMS 1%, 1/4 W 705-6694-000	R5	1	
71	772-0901-001	3	PANEL, COVER		1	
72	F12NCFMA2-62	4	NUT, SELF-LKG, CLINCH, CAD. PL STL, 6-32 72962 333-0842-000		4	
73	772-8995-001	4	PLATE, INSTRUCTIVE		1	

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE	UNITS PER ASSY.	USAGE CODE
6-1 - 74	SE34PLAIN	4	EYELET, MET., BRS, 0.091 DIA X 0.125 LG BBL 61957 307-1068-000 AP	6	
75	F632-1	4	NUT, PLAIN, CLINCH, STL, 6-32 46384 334-1476-000	8	
76	772-0906-001	4	HINGE, BUTT	1	
77	772-0905-001	4	HINGE, BUTT	1	
- 78	MS20426AD4-4	4	RIVET, SOLID, AL, FH, 1/8 DIA X 0.250 LG SHK 305-1373-000 AP FOR 76 AND 77	8	
79	772-0914-001	4	HANDLE	1	
- 80	MS16535-154	4	RIVET, TUBULAR, AL, 0.123 DIA X 0.188 LG SHK 305-1809-000 AP	6	
81	4402 1/2	4	CATCH 21192 015-3167-010	2	
- 82	MS20426AD4-4	4	RIVET, SOLID, AL, FH, 1/8 DIA X 0.250 LG SHK 305-1373-000 AP	4	
- 83	772-0916-001	4	STOP, COVER AP	2	
- 84	68NM40	4	NUT, SELF-LKG, HEX., AL, 4-40 72962 333-0347-000 AP	2	
- 85	MS51957-15	4	SCREW, MACH., SST, PAN HD, 4-40 X 3/8 343-0135-000 AP	2	
86	772-0692-001	4	PANEL, FRONT	1	
87	S3-225CHROMATE	4	LOCKSPRING 72794 012-1196-000	1	
- 88	MS16535-77	4	RIVET, TUBULAR, AL, 0.089 DIA X 0.156 LG SHK 305-1756-000 AP	2	
89	12-5010-010	4	STUD, TURNLOCK FASTENER, CAD. PL STL, 5/16 X 7/16 72794 012-5010-010	1	
- 90	3	4	RING 72794 012-9002-000 AP	1	
91	772-0902-001	4	COVER ASSY	1	
92	772-0903-001	2	CASE	1	
93	F12NCFMA2-62	3	NUT, SELF-LKG, CLINCH, CAD. PL STL, 6-32 72962 333-0842-000	6	
94	68NM62	3	NUT, SELF-LKG, HEX., AL, 6-32 72962 333-0368-000	4	
95	200-5021-000	3	BUMPER, RUB. 13508	4	
96	772-0904-001	3	CASE	1	

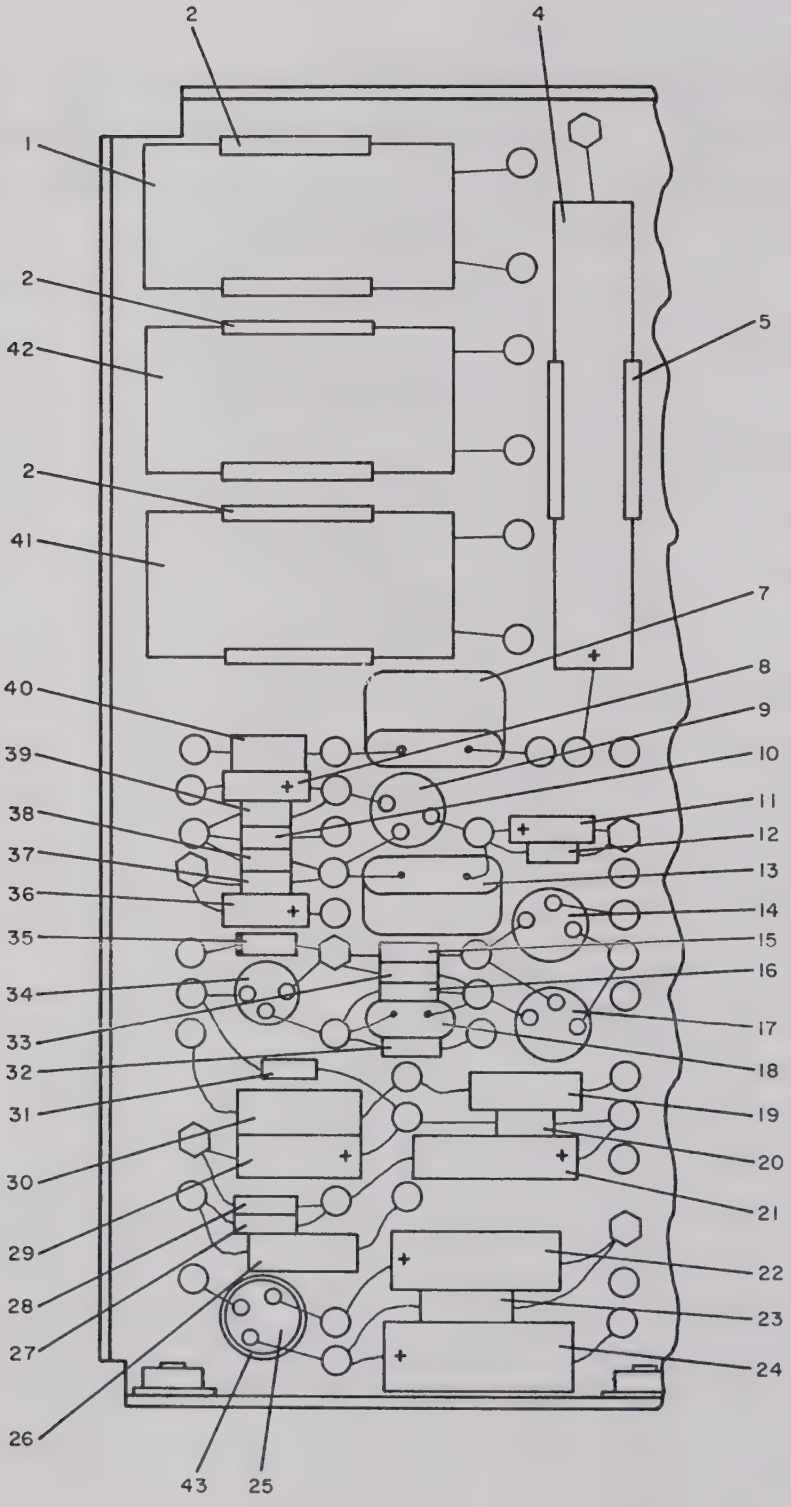


Figure 6-2. Terminal Board, No. 1 (Sheet 1 of 3) (Index 1 thru 44)

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
6-2 - 0	768-9005-001	1	TERMINAL BOARD, NO. 1 SEE FIG. 6-1-10 FOR NHA	TB1	REF	
1	RH289-7072-010	2	XTAL UNIT, QTZ, 19.885 RHZ 82567 289-7072-010	Y1	1	
2	100-206-2	2	CLIP 99378 139-2370-000		3	
- 3	MS16535-76	2	RIVET, TUBULAR, AL, 0.152 DIA X 0.125 LG SHK 305-1755-000 AP		6	
4	600D217G040DL4	2	CAPACITOR, FXD, 210 UF P75M10%, 40 VDCW 56289 183-1277-310	C15	1	
5	6002-4A	2	CLIP 91506 139-2321-000		1	
- 6	MS16535-76	2	RIVET, TUBULAR, AL, 0.152 DIA X 0.125 LG SHK 305-1755-000 AP		2	
7	CM06F472J03	2	CAPACITOR, FXD, 4700 PF 5%, 500 VDCW 912-3052-000	C3	1	
8	150D334X0035A2	2	CAPACITOR, FXD, 0.33 UF 20%, 35 VDCW 56289 184-7406-000	C2	1	
9	2N1711	2	TRANSISTOR 352-0400-000	Q7	1	
10	RC07GF102K	2	RESISTOR, FXD, 1000 OHMS 10%, 1/4 W 745-0749-000	R16	1	
11	150D225X0020A2	2	CAPACITOR, FXD, 2.2 UF 20%, 20 VDCW 56289 184-7377-000	C5	1	
12	RC07GF272K	2	RESISTOR, FXD, 2700 OHMS 10%, 1/4 W 745-0764-000	R20	1	
13	CM06F272J03	2	CAPACITOR, FXD, 2700 PF 5%, 500 VDCW 912-3034-000	C4	1	
14	2N1711	2	TRANSISTOR 352-0400-000	Q14	1	
15	RC07GF473K	2	RESISTOR, FXD, 47,000 OHMS 10%, 1/4 W 745-0809-000	R45	1	
16	RC07GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R39	1	
17	2N1711	2	TRANSISTOR 352-0400-000	Q15	1	
18	CM05F201J03	2	CAPACITOR, FXD, 200 PF 5%, 500 VDCW 912-2837-000	C10	1	
19	RW69V471	2	RESISTOR, FXD, 470 OHMS 5%, 3 W 747-5391-000	R40	1	
20	RC07GF471K	2	RESISTOR, FXD, 470 OHMS 10%, 1/4 W 745-0737-000	R44	1	
21	150D226X0035R2	2	CAPACITOR, FXD, 22 UF 20%, 35 VDCW 56289 184-7695-000	C11	1	
22	150D226X0035R2	2	CAPACITOR, FXD, 22 UF 20%, 35 VDCW 56289 184-7695-000	C12	1	
23	RC20GF101K	2	RESISTOR, FXD, 100 OHMS 10%, 1/2 W 745-1310-000	R49	1	
24	150D336X0035S2	2	CAPACITOR, FXD, 33 UF 20%, 35 VDCW 56289 184-7696-000	C14	1	
25	2N657A	2	TRANSISTOR 352-0354-000	Q17	1	
26	RW69V221	2	RESISTOR, FXD, 220 OHMS 5%, 3 W 747-5347-000	R42	1	
27	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000	R41	1	
28	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000	R48	1	
29	150D155X0035B2	2	CAPACITOR, FXD, 1.5 UF 20%, 35 VDCW 56289 184-7688-000	C13	1	

FIG. - ITEM		PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
6-2	30	CL23CJ1R5TN3	2	CAPACITOR, FXD, 1.5 UF P50M15%, 50 VDCW 184-7316-000	C18	1	
	31	RC07GF821K	2	RESISTOR, FXD, 820 OHMS 10%, 1/4 W 745-0746-000	R43	1	
	32	RC07GF474K	2	RESISTOR, FXD, 0.47 MEG 10%, 1/4 W 745-0845-000	R47	1	
	33	RC07GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R46	1	
	34	2N2540	2	TRANSISTOR 352-0509-000	Q16	1	
	35	1N3064	2	SEMICOND DEVICE 353-3404-000	CR23	1	
	36	150D105X0035 A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000	C1	1	
	37	RC07GF223K	2	RESISTOR, FXD, 22,000 OHMS 10%, 1/4 W 745-0797-000	R19	1	
	38	RC07GF473K	2	RESISTOR, FXD, 47,000 OHMS 10%, 1/4 W 745-0809-000	R17	1	
	39	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000	R18	1	
	40	LT4K307	2	COIL, RF, 27,000 UH 240-2715-660	L1	1	
	41	RH289-7072-030	2	XTAL UNIT, QTZ, 20.625 RHZ 82567 289-7072-030	Y3	1	
	42	RH289-7072-020	2	XTAL UNIT, QTZ, 20.285 RHZ 82567 289-7072-020	Y2	1	
	43	TXB2P032-037 3B	2	HOLDER 98978 352-9884-000		1	
	44	MW375-118	2	INSULATOR 08289 302-0640-080 AP		1	
	45	2N1711	2	TRANSISTOR 352-0400-000	Q1	1	
	46	1N645	2	SEMICOND DEVICE 353-2607-000	CR1	1	
	47	1N3064	2	SEMICOND DEVICE 353-3404-000	CR2	1	
	48	1N645	2	SEMICOND DEVICE 353-2607-000	CR4	1	
	49	RC07GF473K	2	RESISTOR, FXD, 47,000 OHMS 10%, 1/4 W 745-0809-000	R1	1	
	50	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000	R2	1	
	51	1N3064	2	SEMICOND DEVICE 353-3404-000	CR3	1	
	52	1N3064	2	SEMICOND DEVICE 353-3404-000	CR6	1	
	53	RC07GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R4	1	
	54	1N965A	2	SEMICOND DEVICE, ZENER DIO, 15 V 10% 353-3222-000	VR1	1	
	55	2N1711	2	TRANSISTOR 352-0400-000	Q2	1	
	56	1N645	2	SEMICOND DEVICE 353-2607-000	CR10	1	
	57	RC07GF473K	2	RESISTOR, FXD, 47,000 OHMS 10%, 1/4 W 745-0809-000	R6	1	
	58	1N3064	2	SEMICOND DEVICE 353-3404-000	CR5	1	
	59	1N3064	2	SEMICOND DEVICE 353-3404-000	CR12	1	
	60	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000	R7	1	
	61	1N3064	2	SEMICOND DEVICE 353-3404-000	CR9	1	
	62	RC07GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R9	1	
	63	1N965A	2	SEMICOND DEVICE, ZENER DIO, 15 V 10% 353-3222-000	VR2	1	
	64	1N3064	2	SEMICOND DEVICE 353-3404-000	CR11	1	

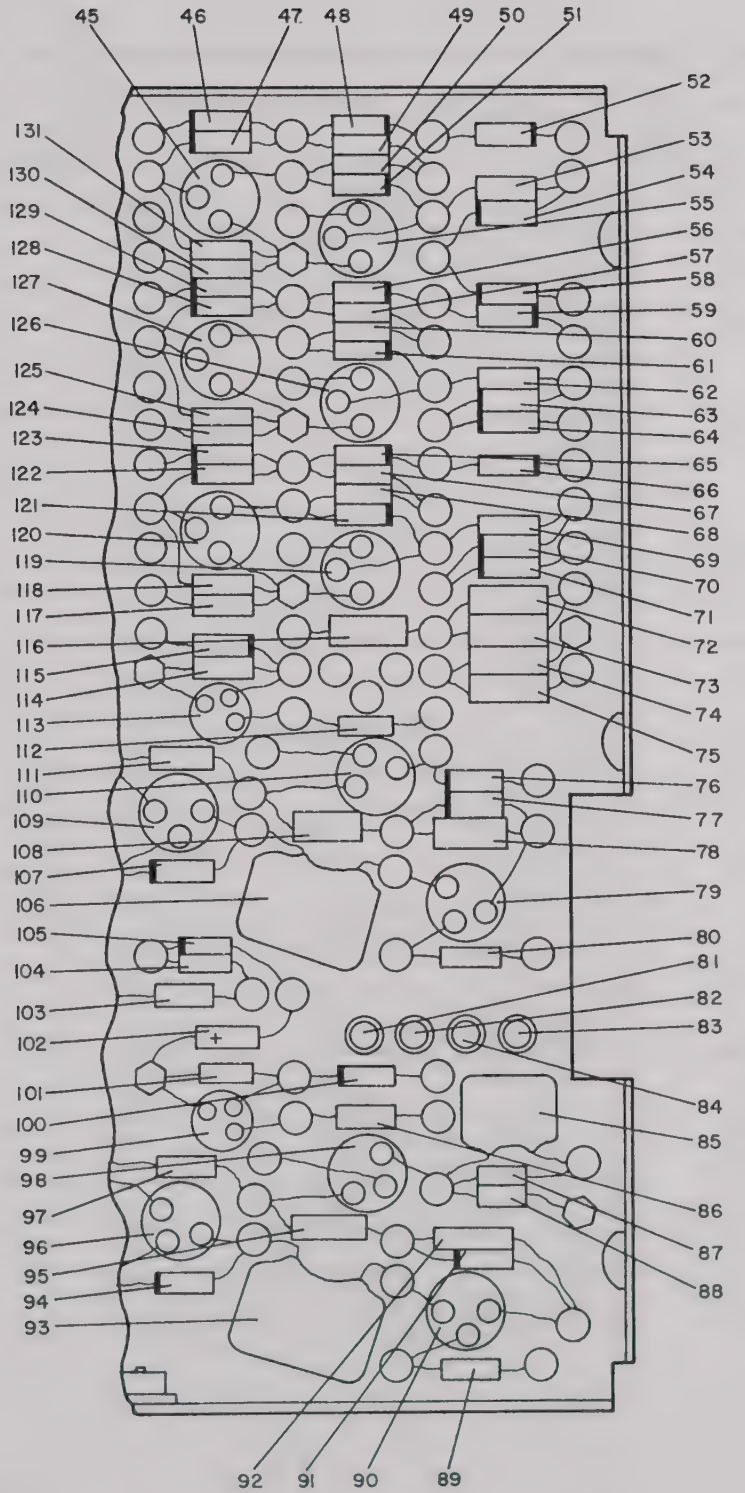


Figure 6-2. Terminal Board, No. 1 (Sheet 2 of 3) (Index 45 thru 131)

FIG. - ITEM		PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
6-2	65	1N645	2	SEMICOND DEVICE 353-2607-000	CR16	1	
	66	1N3064	2	SEMICOND DEVICE 353-3404-000	CR18	1	
	67	RC07GF473K	2	RESISTOR, FXD, 47,000 OHMS 10%, 1/4 W 745-0809-000	R11	1	
	68	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000	R12	1	
	69	RC07GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R14	1	
	70	1N965A	2	SEMICOND DEVICE, ZENER DIO, 15 V 10% 353-3222-000	VR3	1	
	71	1N3064	2	SEMICOND DEVICE 353-3404-000	CR17	1	
	72	RN60D2490F	2	RESISTOR, FXD, 249 OHMS 1%, 1/4 W 705-6567-000	R31	1	
	73	763F18	2	RESISTOR, THRM, 125 OHMS 10%, 1 W 10646 714-0178-000	RT1	1	
	74	763F18	2	RESISTOR, THRM, 125 OHMS 10%, 1 W 10646 714-0178-000	RT2	1	
	75	RN60D9090F	2	RESISTOR, FXD, 909 OHMS 1%, 1/4 W 705-6594-000	R36	1	
	75	RN60D6190F	2	RESISTOR, FXD, 619 OHMS 1%, 1/4 W 705-6586-000	R36	1	
	75	RN60D6810F	2	RESISTOR, FXD, 681 OHMS 1%, 1/4 W 705-6588-000	R36	1	
	75	RN60D7500F	2	RESISTOR, FXD, 750 OHMS 1%, 1/4 W 705-6590-000	R36	1	
	75	RN60D7870F	2	RESISTOR, FXD, 787 OHMS 1%, 1/4 W 705-6591-000	R36	1	
	75	RN60D8250F	2	RESISTOR, FXD, 825 OHMS 1%, 1/4 W 705-6592-000	R36	1	
	75	RN60D1001F	2	RESISTOR, FXD, 1000 OHMS 1%, 1/4 W 705-6596-000	R36	1	
	75	RN60D1101F	2	RESISTOR, FXD, 1100 OHMS 1%, 1/4 W 705-6598-000	R36	1	
	76	1N4370	2	SEMICOND DEVICE, ZENER DIO, 2.4 V 10% 353-3595-010	VR4	1	
	77	1N3026B	2	SEMICOND DEVICE, ZENER DIO, 18 V 5% 353-3131-000	VR6	1	
	78	RN60D4871F	2	RESISTOR, FXD, 4870 OHMS 1%, 1/4 W 705-6629-000	R30	1	
	79	2N2905A	2	TRANSISTOR 352-0550-000	Q9	1	
	80	RC07GF100K	2	RESISTOR, FXD, 10 OHMS 10%, 1/4 W 745-0677-000	R33	1	
	81	SKT5BCRED	2	JACK 98291 360-0139-000	J4	1	
	82	SKT5BCRED	2	JACK 98291 360-0139-000	J3	1	
	83	SKT5BCRED	2	JACK 98291 360-0139-000	J1	1	
	84	SKT5BCRED	2	JACK 98291 360-0139-000	J2	1	
	85	CM05F101J03	2	CAPACITOR, FXD, 100 PF 5%, 500 VDCW 912-2816-000	C17	1	
	86	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000	R29	1	
	87	RC07GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R52	1	
	88	RC07GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R53	1	

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
6-2 89	RC07GF100K	2	RESISTOR, FXD, 10 OHMS 10%, 1/4 W 745-0677-000	R35	1	
90	2N2905A	2	TRANSISTOR 352-0550-000	Q10	1	
91	1N3026B	2	SEMICOND DEVICE, ZENER DIO, 18 V 5% 353-3131-000	VR7	1	
92	RN60D4871F	2	RESISTOR, FXD, 4870 OHMS 1%, 1/4 W 705-6629-000	R32	1	
93	CM06F332J03	2	CAPACITOR, FXD, 3300 PF 5%, 500 VDCW 912-3040-000	C9	1	
94	1N3064	2	SEMICOND DEVICE 353-3404-000	CR20	1	
95	RN60D3160F	2	RESISTOR, FXD, 316 OHMS 1%, 1/4 W 705-6572-000	R27	1	
96	2N1711	2	TRANSISTOR 352-0400-000	Q11	1	
97	RC07GF101K	2	RESISTOR, FXD, 100 OHMS 10%, 1/4 W 745-0713-000	R28	1	
98	2N1711	2	TRANSISTOR 352-0400-000	Q18	1	
99	2N2540	2	TRANSISTOR 352-0509-000	Q13	1	
100	1N3064	2	SEMICOND DEVICE 353-3404-000	CR22	1	
101	RC07GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R38	1	
102	150D105X0035 A2	2	CAPACITOR, FXD, 1 UF 20%, 35 VDCW 56289 184-7398-000	C16	1	
103	RC07GF330K	2	RESISTOR, FXD, 33 OHMS 10%, 1/4 W 745-0695-000	R50	1	
104	RC07GF223K	2	RESISTOR, FXD, 22,000 OHMS 10%, 1/4 W 745-0797-000	R51	1	
105	1N969B	2	SEMICOND DEVICE, ZENER DIO, 22 V 5% 353-3180-000	VR5	1	
106	CM06F032J03	2	CAPACITOR, FXD, 3300 PF 5%, 500 VDCW 912-3040-000	C8	1	
107	1N3064	2	SEMICOND DEVICE 353-3404-000	CR19	1	
108	RN60D3160F	2	RESISTOR, FXD, 316 OHMS 1%, 1/4 W 705-6572-000	R25	1	
109	2N1711	2	TRANSISTOR 352-0400-000	Q8	1	
110	2N2905A	2	TRANSISTOR 352-0550-000	Q19	1	
111	RC07GF101K	2	RESISTOR, FXD, 100 OHMS 10%, 1/4 W 745-0713-000	R24	1	
112	RC07GF153K	2	RESISTOR, FXD, 15,000 OHMS 10%, 1/4 W 745-0791-000	R23	1	
113	2N2540	2	TRANSISTOR 352-0509-000	Q12	1	
114	RC07GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R37	1	
115	1N3064	2	SEMICOND DEVICE 353-3404-000	CR21	1	
116	RN60D3650F	2	RESISTOR, FXD, 365 OHMS 1%, 1/4 W 705-6575-000	R26	1	
117	RC07GF333K	2	RESISTOR, FXD, 33,000 OHMS 10%, 1/4 W 745-0803-000	R15	1	
118	RC07GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R13	1	
119	2N1711	2	TRANSISTOR 352-0400-000	Q6	1	
120	2N1711	2	TRANSISTOR 352-0400-000	Q5	1	
121	1N3064	2	SEMICOND DEVICE 353-3404-000	CR15	1	
122	1N3064	2	SEMICOND DEVICE 353-3404-000	CR14	1	
123	1N645	2	SEMICOND DEVICE 353-2607-000	CR13	1	

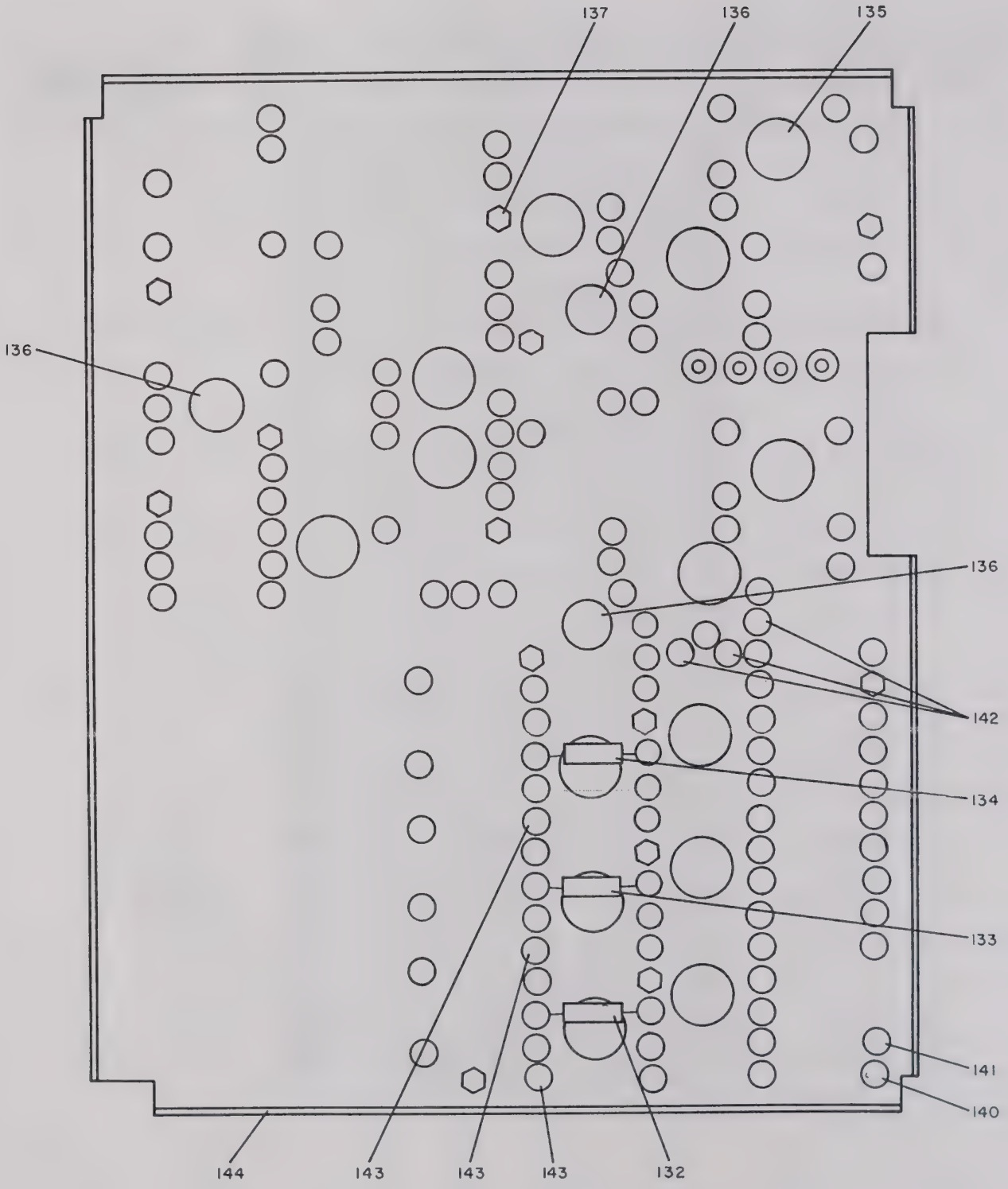


Figure 6-2. Terminal Board, No. 1 (Sheet 3 of 3) (Index 132 thru 144)

FIG. - ITEM		PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
6-2	124	RC07GF333K	2	RESISTOR, FXD, 33,000 OHMS 10%, 1/4 W 745-0803-000	R10	1	
	125	RC07GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R8	1	
	126	2N1711	2	TRANSISTOR 352-0400-000	Q4	1	
	127	2N1711	2	TRANSISTOR 352-0400-000	Q3	1	
	128	1N3064	2	SEMICOND DEVICE 353-3404-000	CR8	1	
	129	1N645	2	SEMICOND DEVICE 353-2607-000	CR7	1	
	130	RC07GF333K	2	RESISTOR, FXD, 33,000 OHMS 10%, 1/4 W 745-0803-000	R5	1	
	131	RC07GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R3	1	
	132	RC20GF121K	2	RESISTOR, FXD, 120 OHMS 10%, 1/2 W 745-1314-000	R54	1	
	133	RC20GF121K	2	RESISTOR, FXD, 120 OHMS 10%, 1/2 W 745-1314-000	R55	1	
	134	RC20GF121K	2	RESISTOR, FXD, 120 OHMS 10%, 1/2 W 745-1314-000	R56	1	
	135	T1532	2	HOLDER 98291 352-9508-000		15	
	136	T1533	2	HOLDER 98291 352-9509-000		3	
	137	M426	2	TERMINAL 21242 306-2204-000		14	
	-138	P334-0278-000	2	NUT, PLAIN, HEX., NI PL STL, 2-56 77250 334-0278-000 AP		14	
	-139	MS35337-96	2	WASHER, LOCK, CAD. PL BRZ, 0.088 ID, 0.165 OD 310-0094-000 AP		14	
	140	SL304-301WHT	2	TERMINAL 12615 306-1851-000		82	
	141	DP439-433WHT	2	TERMINAL 21242 306-1521-000		31	
	142	DP439-433RED	2	TERMINAL 21242 306-1524-000		3	
	143	SL304-301RED	2	TERMINAL 12615 306-1854-000		6	
	144	768-9006-001	2	TERMINAL BOARD		1	

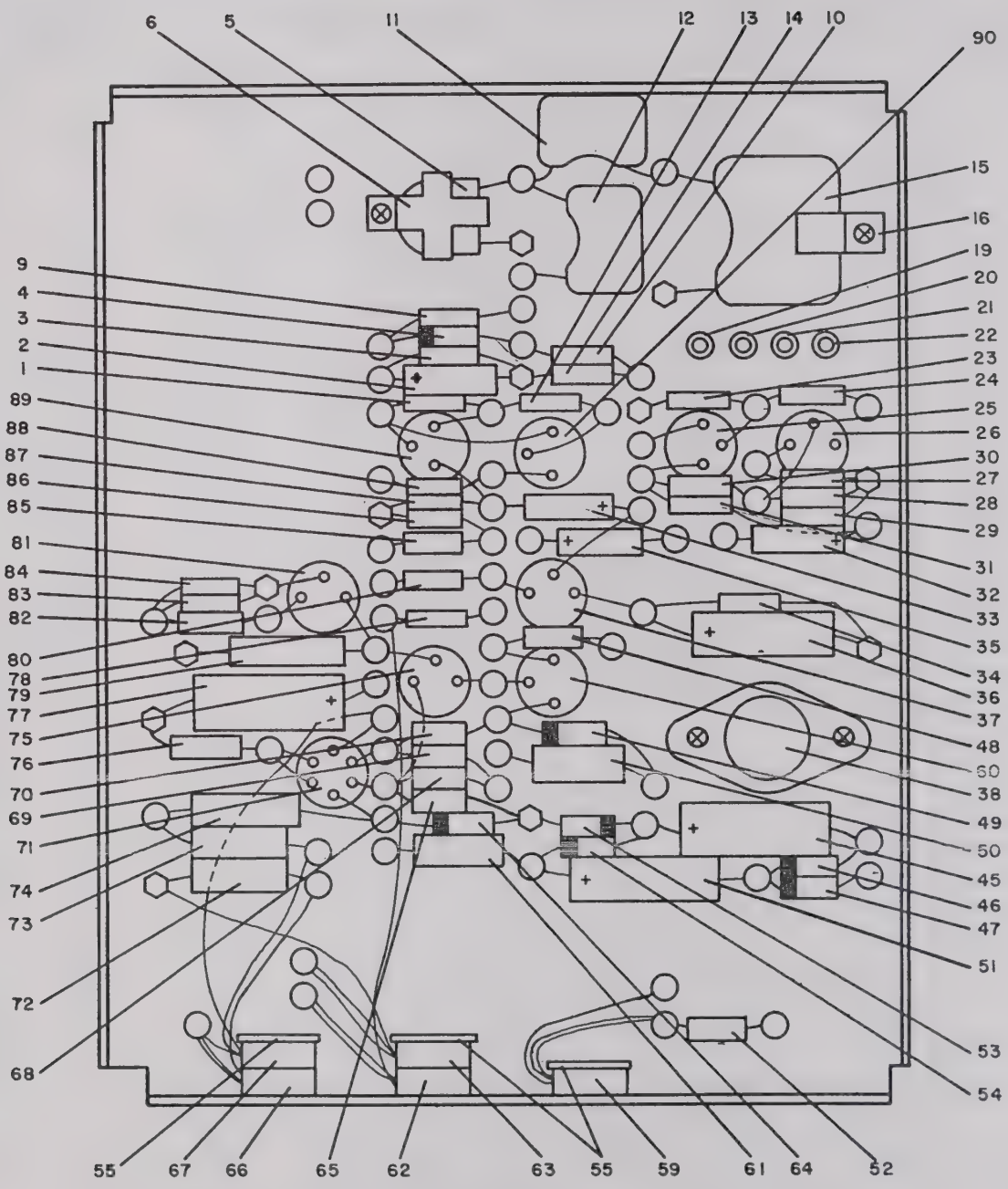


Figure 6-3. Terminal Board, No. 2 (Sheet 1 of 2) (Index 1 thru 90)

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
6-3 - 0	768-9009-001	1	TERMINAL BOARD, NO. 2 SEE FIG. 6-1-13 FOR NHA	TB2	REF	
1	RC07GF822K	2	RESISTOR, FXD, 8200 OHMS 10%, 1/4 W 745-0782-000	R5	1	
2	150D685X0035 B2	2	CAPACITOR, FXD, 6.8 UF 20%, 35 VDCW 56289 184-7693-000	C6	1	
3	RC07GF392K	2	RESISTOR, FXD, 3900 OHMS 10%, 1/4 W 745-0770-000	R16	1	
4	1N645	2	SEMICOND DEVICE 353-2607-000	CR1	1	
5	DL644	2	REACTOR 80223 668-0035-000	L1	1	
6	554-2164-003	2	CLIP, SPG TENS		1	
- 7	68NM26	2	NUT, SELF-LKG, HEX., AL, 2-56 72962 333-0327-000 AP		1	
- 8	MS51957-4	2	SCREW, MACH., SST, PAN HD, 2-56 X 5/16 343-0125-000 AP		1	
9	RN60D1960F	2	RESISTOR, FXD, 196 OHMS 1%, 1/4 W 705-6562-000	R42	1	
10	RN60D5621F	2	RESISTOR, FXD, 5620 OHMS 1%, 1/4 W 705-6632-000	R9	1	
11	CM06F472J03	2	CAPACITOR, FXD, 4700 PF 5%, 500 VDCW 912-3052-000	C2	1	
12	CM06F472J03	2	CAPACITOR, FXD, 4700 PF 5%, 500 VDCW 912-3052-000	C3	1	
13	RC07GF473K	2	RESISTOR, FXD, 47,000 OHMS 10%, 1/4 W 745-0809-000	R4	1	
14	RN60D5110F	2	RESISTOR, FXD, 511 OHMS 1%, 1/4 W 705-6582-000	R21	1	
15	CM07F682J03	2	CAPACITOR, FXD, 6800 PF 5%, 500 VDCW 912-2723-000	C1	1	
16	554-2150-002	2	RETAINER, CAPACITOR		1	
- 17	68NM26	2	NUT, SELF-LKG, HEX., AL, 2-56 72962 333-0327-000 AP		1	
- 18	MS51957-4	2	SCREW, MACH., SST, PAN HD, 2-56 X 5/16 343-0125-000 AP		1	
19	SKT5BCRED	2	JACK 98291 360-0139-000	J4	1	
20	SKT5BCRED	2	JACK 98291 360-0139-000	J3	1	
21	SKT5BCRED	2	JACK 98291 360-0139-000	J2	1	
22	SKT5BCRED	2	JACK 98291 360-0139-000	J1	1	
23	RC07GF273K	2	RESISTOR, FXD, 27,000 OHMS 10%, 1/4 W 745-0800-000	R10	1	
24	RN65C2871F	2	RESISTOR, FXD, 2870 OHMS 1%, 1/4 W 705-4572-000	R1	1	
25	2N1711	2	TRANSISTOR 352-0400-000	Q1	1	
26	2N1711	2	TRANSISTOR 352-0400-000	Q2	1	
27	RC07GF102K	2	RESISTOR, FXD, 1000 OHMS 10%, 1/4 W 745-0749-000	R13	1	
28	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000	R12	1	
29	RC07GF183K	2	RESISTOR, FXD, 18,000 OHMS 10%, 1/4 W 745-0794-000	R14	1	
30	RC07GF333K	2	RESISTOR, FXD, 33,000 OHMS 10%, 1/4 W 745-0803-000	R2	1	
31	RC07GF472K	2	RESISTOR, FXD, 4700 OHMS 10%, 1/4 W 745-0773-000	R3	1	
32	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000	C5	1	
33	150D685X0035 B2	2	CAPACITOR, FXD, 6.8 UF 20%, 35 VDCW 56289 184-7693-000	C7	1	
34	RN60D2611F	2	RESISTOR, FXD, 2610 OHMS 1%, 1/4 W 705-6616-000	R18	1	

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
6-3 35	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000	C4	1	
36	150D475X0035 B2	2	CAPACITOR, FXD, 4.7 UF 20%, 35 VDCW 56289 184-7396-000	C8	1	
37	2N2905A	2	TRANSISTOR 352-0550-000	Q5	1	
38	2N3054	2	TRANSISTOR 02735	Q6	1	
- 39	TW115-147	2	SPACER 08289 352-9561-070 AP	Q6	1	
- 40	P313-0051-000	2	NUT, PLAIN, HEX., NI PL BRS, 4-40 77250 313-0051-000 AP		2	
- 41	1904-00	2	WASHER, LOCK, CAD. PL BRZ, 0.123 ID, 0.270 OD 78189 373-3010-000 AP		2	
- 42	545-7544-003	2	WASHER AP		2	
- 43	504-0729-000	2	WASHER AP		1	
- 44	P343-0286-000	2	SCREW, MACH., NI PL BRS, PAN HD, 4-40 X 5/16 77250 343-0286-000 AP		2	
45	600D306G040K D4	2	CAPACITOR, FXD, 30 UF P75M10%, 40 VDCW 56289 183-1277-270	C9	1	
46	1N4002	2	SEMICOND DEVICE 353-6442-020	CR4	1	
47	1N4002	2	SEMICOND DEVICE 353-6442-020	CR5	1	
48	RC20GF390K	2	RESISTOR, FXD, 39 OHMS 10%, 1/2 W 745-1293-000	R23	1	
49	1N751A	2	SEMICOND DEVICE, ZENER DIO, 5.1 V 5% 353-2710-000	VR1	1	
50	RN65D2871F	2	RESISTOR, FXD, 2870 OHMS 1%, 1/2 W 705-7118-000	R28	1	
51	600D306G040K D4	2	CAPACITOR, FXD, 30 UF P75M10%, 40 VDCW 56289 183-1277-270	C10	1	
52	RN60D1001F	2	RESISTOR, FXD, 1000 OHMS 1%, 1/4 W 705-6596-000	R38	1	
53	1N645	2	SEMICOND DEVICE 353-2607-000	CR3	1	
54	1N645	2	SEMICOND DEVICE 353-2607-000	CR2	1	
55	756-7045-002	2	STRAP, RETAINING		3	
- 56	P343-0005-000	2	SCREW, MACH., SST, PAN HD, 2-56 X 5/8 77250 343-0005-000 AP		4	
- 57	MS51957-70	2	SCREW, MACH., SST, 10-24 X 1-3/4 343-0217-000 AP		2	
- 58	310-0075-000	2	WASHER, LOCK, BRZ, 0.088 ID, 0.165 OD COML AP		6	
59	RT22C2L501	2	RESISTOR, VAR, 500 OHMS 5%, 3/4 W 381-1721-090	R39	1	
60	2N2905A	2	TRANSISTOR 352-0550-000	Q7	1	
61	RC32GF182K	2	RESISTOR, FXD, 1800 OHMS 10%, 1 W 745-3363-000	R22	1	
62	RT22C2L203	2	RESISTOR, VAR, 20,000 OHMS 5%, 3/4 W 381-1721-160	R20	1	
63	RT22C2L501	2	RESISTOR, VAR, 500 OHMS 5%, 3/4 W 381-1721-090	R41	1	
64	1N938A	2	SEMICOND DEVICE 353-3158-000	VR2	1	
65	RN60C1472F	2	RESISTOR, FXD, 14,700 OHMS 1%, 1/8 W 705-6301-000	R30	1	
66	RT22C2L500	2	RESISTOR, VAR, 50 OHMS 5%, 3/4 W 381-1721-180	R33	1	
67	RT22C2L102	2	RESISTOR, VAR, 1000 OHMS 5%, 3/4 W 381-1721-100	R32	1	
68	RN60C4641F	2	RESISTOR, FXD, 4640 OHMS 1%, 1/8 W 705-6289-000	R25	1	
69	RN60C4222F	2	RESISTOR, FXD, 42,200 OHMS 1%, 1/8 W 705-6312-000	R26	1	

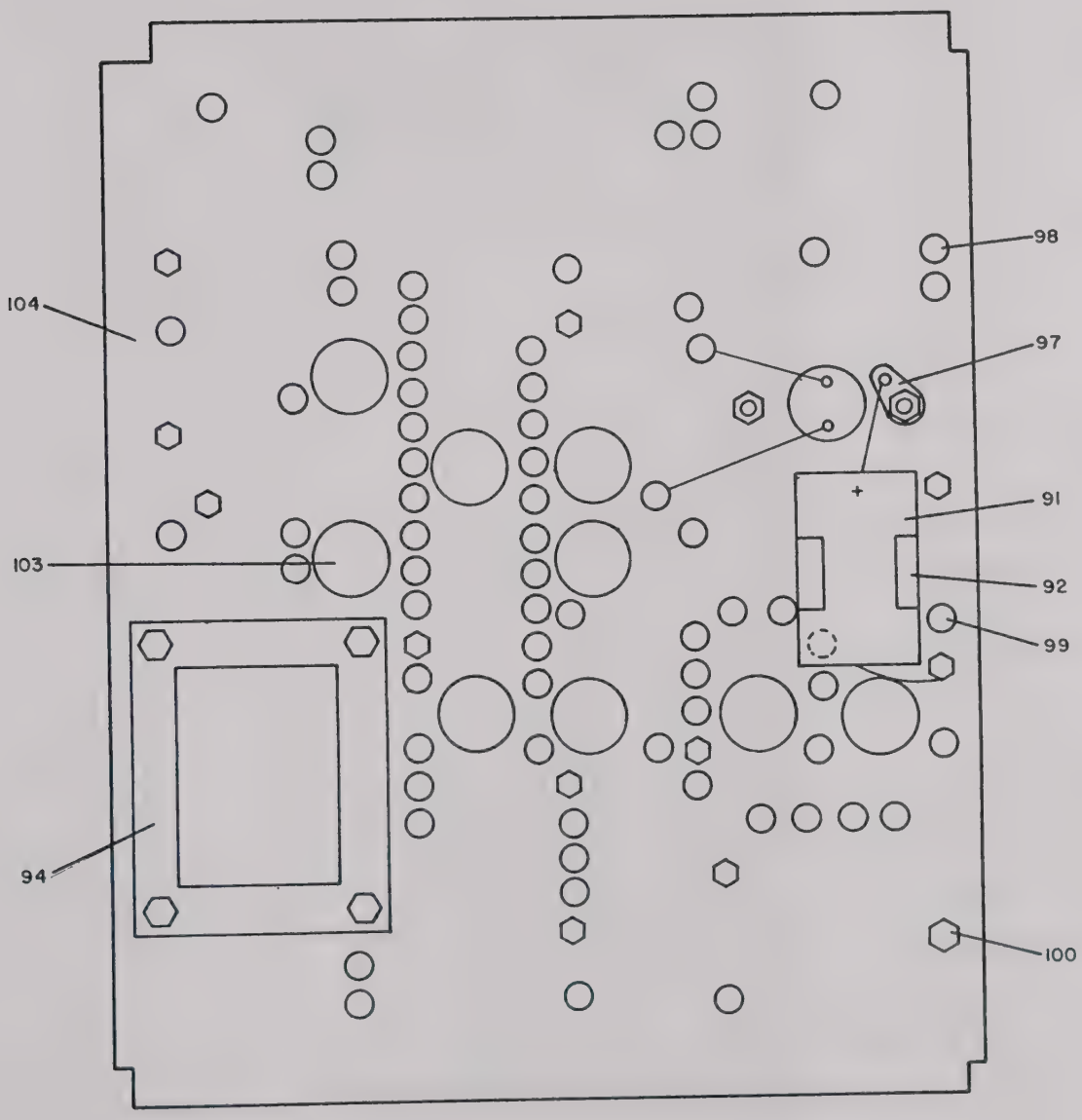


Figure 6-3. Terminal Board, No. 2 (Sheet 2 of 2) (Index 91 thru 104)

FIG. - ITEM		PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
6-3	70	RN60C1213F	2	RESISTOR, FXD, 121,000 OHMS 1%, 1/8 W 705-6324-000	R29	1	
	71	2N2223	2	SEMICOND SET 351-0004-010	Q8A, Q8B	1	
	72	533-102	2	RESISTOR, FXD, 1000 OHMS 3%, 3 W 91637 747-9307-000	R37	1	
	73	533-302	2	RESISTOR, FXD, 3000 OHMS 3%, 3 W 91637 747-9309-000	R27	1	
	74	RN65C2871F	2	RESISTOR, FXD, 2870 OHMS 1%, 1/4 W 705-4572-000	R24	1	
	75	2N1711	2	TRANSISTOR 352-0400-000	Q9	1	
	76	RN60C1472F	2	RESISTOR, FXD, 14,700 OHMS 1%, 1/8 W 705-6301-000	R31	1	
	77	CS13BF476M	2	CAPACITOR, FXD, 47 UF 20%, 35 VDCW 184-6231-000	C13	1	
	78	RC07GF393K	2	RESISTOR, FXD, 39,000 OHMS 10%, 1/4 W 745-0806-000	R19	1	
	79	96P223U1S4	2	CAPACITOR, FXD, 0.022 UF 20%, 100 VDCW 56289 931-2499-000	C14	1	
	80	RN60D5110F	2	RESISTOR, FXD, 511 OHMS 1%, 1/4 W 705-6582-000	R8	1	
	81	2N1711	2	TRANSISTOR 352-0400-000	Q10	1	
	82	RN60D1470F	2	RESISTOR, FXD, 147 OHMS 1%, 1/4 W 705-6556-000	R34	1	
	83	RS1-2-2R00F	2	RESISTOR, FXD, 2 OHMS 10%, 1 W 91637 747-1989-020	R36	1	
	84	RS1-2-2R00F	2	RESISTOR, FXD, 2 OHMS 10%, 1 W 91637 747-1989-020	R35	1	
	85	RN60D5111F	2	RESISTOR, FXD, 5110 OHMS 1%, 1/4 W 705-6630-000	R6	1	
	86	RC07GF223K	2	RESISTOR, FXD, 22,000 OHMS 10%, 1/4 W 745-0797-000	R7	1	
	87	RC07GF103K	2	RESISTOR, FXD, 10,000 OHMS 10%, 1/4 W 745-0785-000	R17	1	
	88	RC07GF681K	2	RESISTOR, FXD, 680 OHMS 10%, 1/4 W 745-0743-000	R15	1	
	89	2N1711	2	TRANSISTOR 352-0400-000	Q4	1	
	90	2N1711	2	TRANSISTOR 352-0400-000	Q3	1	
	91	601D437G040J E4	2	CAPACITOR, FXD, 430 UF P75M10%, 40 VDCW 56289 183-1282-320	C11	1	
	92	E50008-051	2	RETAINER 80033 139-0090-000		1	
-	93	MS16535-153	2	RIVET, TUBULAR, AL, 0.123 DIA X 0.156 LG SHK 305-1808-000 AP		1	
	94	16864	2	TRANSFORMER 07388 662-0296-010	T1	1	
-	95	68NM62	2	NUT, SELF-LKG, HEX., AL, 6-32 72962 333-0368-000 AP		4	
-	96	MS51957-27	2	SCREW, MACH., SST, PAN HD, 6-32 X 5/16 343-0168-000 AP		4	
	97	4007-4H0TTIN NED	2	TERMINAL 77147 304-0015-000		1	
	98	SL304-301WHT	2	TERMINAL 12615 306-1851-000		42	
	99	DP439-433WHT	2	TERMINAL 21242 306-1521-000		22	
	100	M426	2	TERMINAL 21242 306-2204-000		12	
-	101	P334-0278-00 0	2	NUT, PLAIN, HEX., NI PL STL, 2-56 77250 334-0278-000 AP		12	
-	102	MS35337-96	2	WASHER, LOCK, CAD. PL BRZ, 0.088 ID, 0.165 OD 310-0094-000 AP		12	
	103	T1532	2	HOLDER 98291 352-9508-000		9	
	104	768-9010-001	2	TERMINAL BOARD		1	

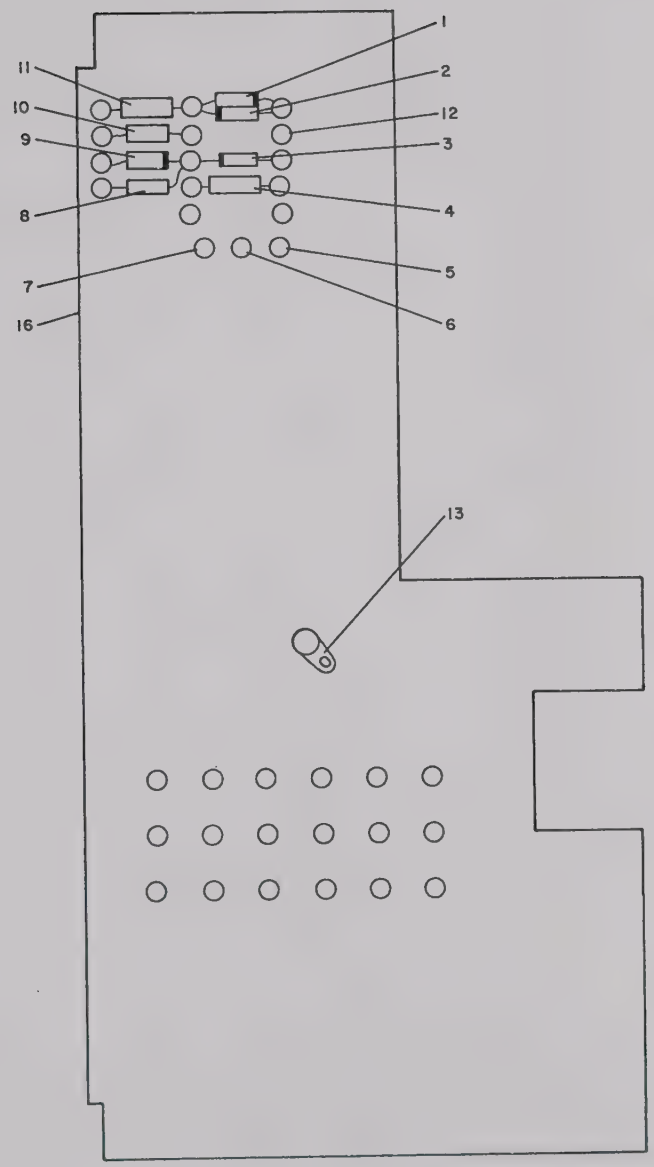
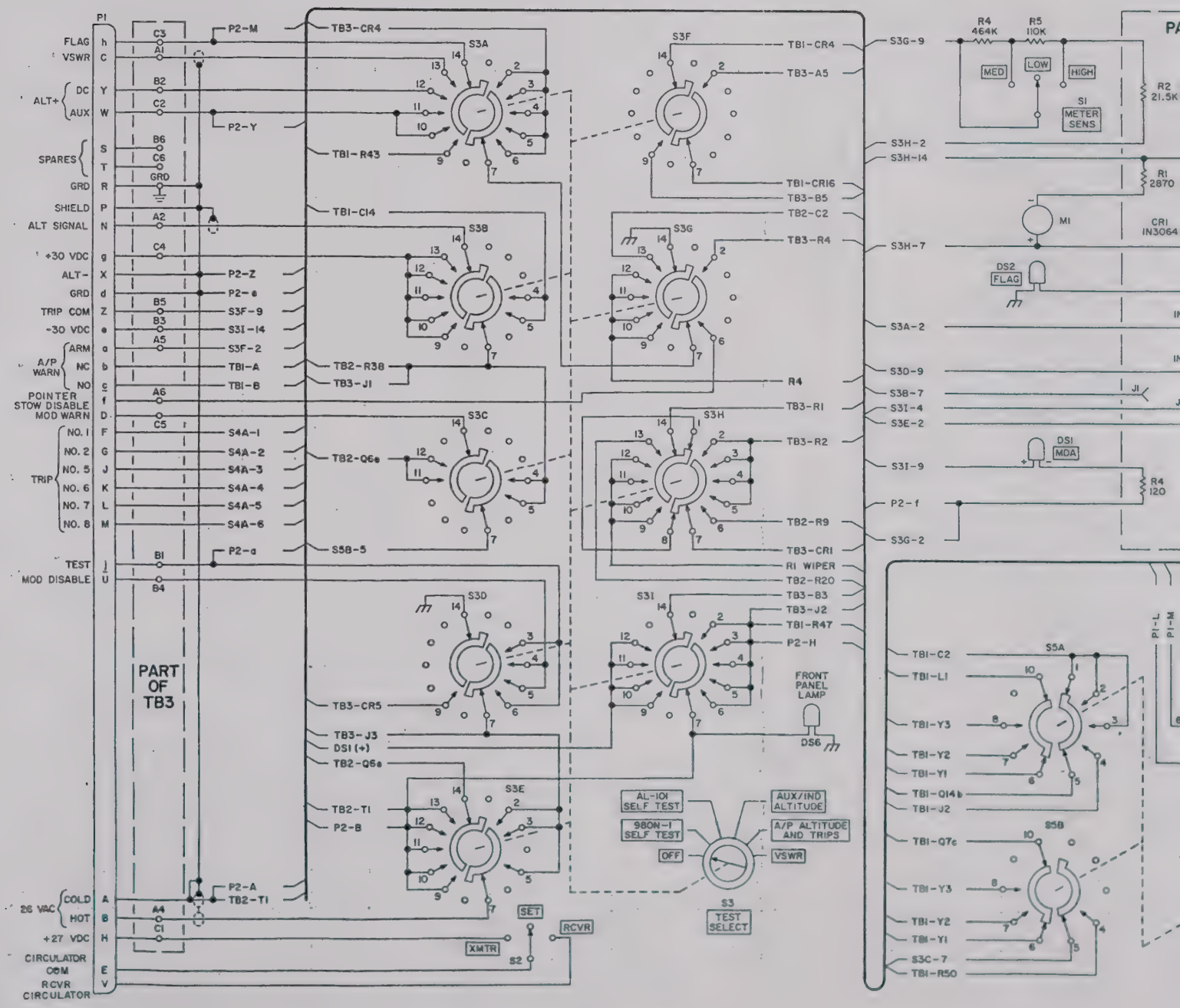


Figure 6-4. Terminal Board, No. 3

FIG. - ITEM	PART NO.	INDENT.	NOMENCLATURE		UNITS PER ASSY.	USAGE CODE
6-4 - 0	772-0909-001	1	TERMINAL BOARD, NO. 3 SEE FIG. 6-1-16 FOR NHA	TB3	REF	
1	1N3064	2	SEMICOND DEVICE 353-3404-000	CR1	1	
2	1N3064	2	SEMICOND DEVICE 353-3404-000	CR2	1	
3	1N3064	2	SEMICOND DEVICE 353-3404-000	CR5	1	
4	RN60D2152F	2	RESISTOR, FXD, 21,500 OHMS 1%, 1/4 W 705-6660-000	R2	1	
5	SKT5BCRED	2	JACK 98291 360-0139-000	J1	1	
6	SKT5BCRED	2	JACK 98291 360-0139-000	J2	1	
7	SKT5BCRED	2	JACK 98291 360-0139-000	J3	1	
8	RC20GF121K	2	RESISTOR, FXD, 120 OHMS 10%, 1/2 W 745-1314-000	R4	1	
9	1N3064	2	SEMICOND DEVICE 353-3404-000	CR4	1	
10	RC20GF121K	2	RESISTOR, FXD, 120 OHMS 10%, 1/2 W 745-1314-000	R3	1	
11	RN60D2871F	2	RESISTOR, FXD, 2870 OHMS 1%, 1/4 W 705-6618-000	R1	1	
12	SL304-301WHT	2	TERMINAL 12615 306-1851-000		32	
13	547-5305-002	2	TERMINAL, LUG		1	
- 14	68NM62	2	NUT, SELF-LKG, HEX., AL, 6-32 72962 333-0368-000 AP		1	
- 15	P343-0618-00 0	2	SCREW, MACH., CAD. PL STL, 1/4-20 X 15/32 77250 343-0618-000 AP		1	
16	772-0911-001	2	TERMINAL BOARD, NO. 3		1	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-30 VDC e
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NO c
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D
TRIP NO. 1 F
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NO. 5 J
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C6
GRD
A2
C4
P2-Z
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A4
C1
P2-M
TB3-CR4
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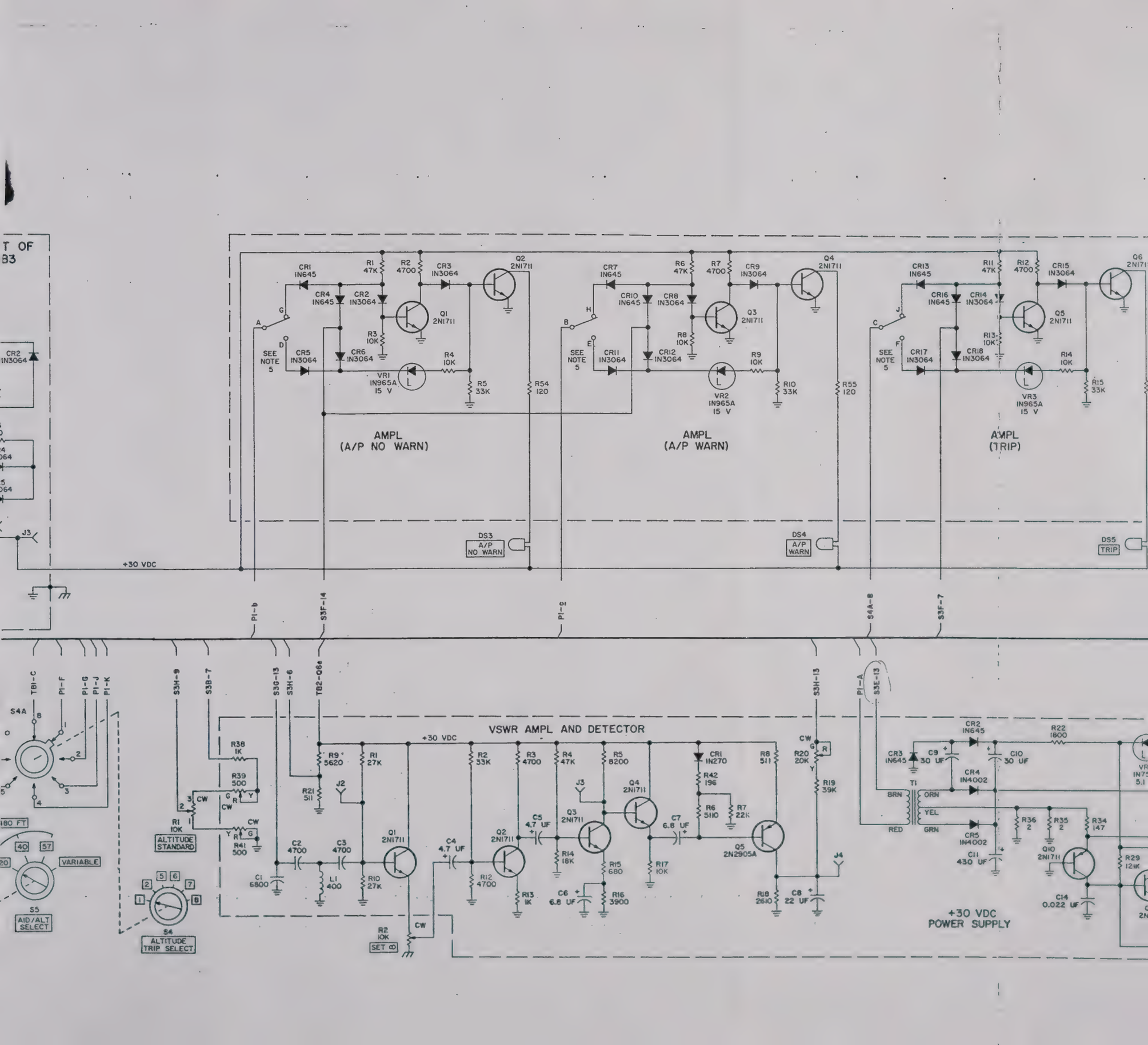
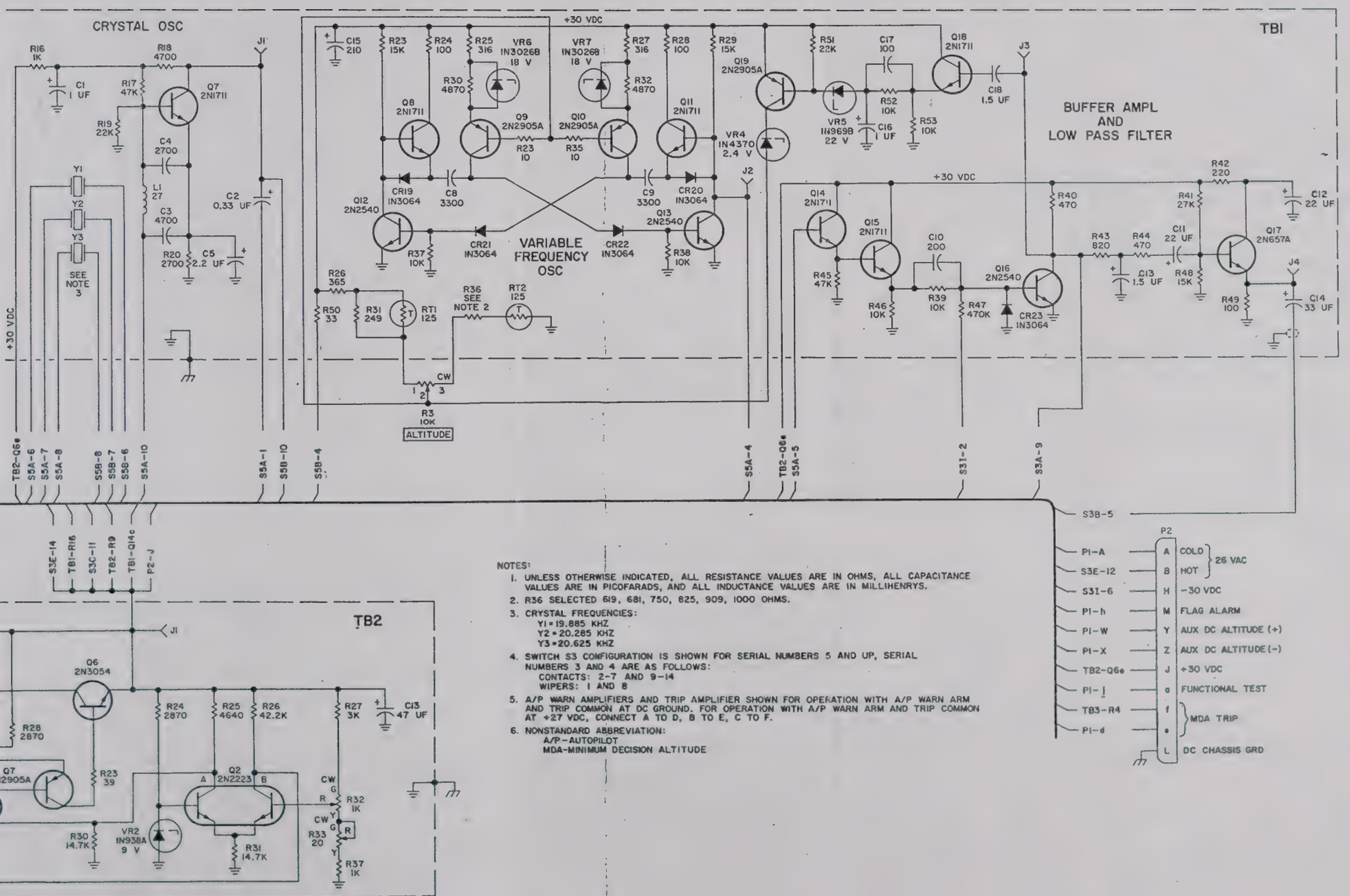
TB1-C14
S3B
TB2-R38
TB3-J1
S3C
TB2-Q6e
S5B-5
S3D
TB3-CR5
TB3-J3
DS1 (+)
TB2-Q6e
S3E
TB2-T1
P2-B
SET
RCVR
XMTR
S2
S3F
TB1-CR4
TB3-A5
TB1-CR16
TB3-B5
TB2-C2
S3G
TB3-R4
R4
TB3-R1
S3H
TB3-R2
TB2-R9
TB3-CR1
R1 WIPER
TB2-R20
TB3-B3
TB3-J2
S3I
TB1-R47
P2-H
FRONT PANEL LAMP
DS6
AL-101 SELF TEST
980N-1 SELF TEST
OFF
AUX/IND ALTITUDE
A/P ALTITUDE AND TRIPS
VSWR
S3 TEST SELECT
S3G-9
S3H-2
S3H-14
S3H-7
S3A-2
S3D-9
S3B-7
S3I-4
S3E-2
S3I-9
P2-f
S3G-2
R4 464K
R5 110K
MED
LOW
HIGH
S1 METER SENS
R2 21.5K
R1 2870
MI
CR1 IN3064
DS2 FLAG
J1
DS1 MDA
R4 120
P1-L
P1-M
TB1-C2
TB1-L1
TB1-Y3
TB1-Y2
TB1-Y1
TB1-Q14b
TB1-J2
TB1-Q7c
TB1-Y3
TB1-Y2
TB1-Y1
S3C-7
TB1-R50
S5A
S5B


AMPL
(A/P NO WARN)
AMPL
(A/P WARN)
AMPL
(TRIP)
DS3
A/P
NO WARN
DS4
A/P
WARN
DS5
TRIP
+30 VDC
VSWR AMPL AND DETECTOR
+30 VDC
POWER SUPPLY
ALTITUDE
STANDARD
ALTITUDE
TRIP SELECT
AID/ALT
SELECT
VARIABLE
SET ∞



NOTES:

1. UNLESS OTHERWISE INDICATED, ALL RESISTANCE VALUES ARE IN OHMS, ALL CAPACITANCE VALUES ARE IN PICOFARADS, AND ALL INDUCTANCE VALUES ARE IN MILLIHENRYS.
2. R36 SELECTED 619, 681, 750, 825, 909, 1000 OHMS.
3. CRYSTAL FREQUENCIES:
   Y1 = 19.885 KHZ
   Y2 = 20.285 KHZ
   Y3 = 20.625 KHZ
4. SWITCH S3 CONFIGURATION IS SHOWN FOR SERIAL NUMBERS 5 AND UP, SERIAL NUMBERS 3 AND 4 ARE AS FOLLOWS:
   CONTACTS: 2-7 AND 9-14
   WIPERS: 1 AND 8
5. A/P WARN AMPLIFIERS AND TRIP AMPLIFIER SHOWN FOR OPERATION WITH A/P WARN ARM AND TRIP COMMON AT DC GROUND. FOR OPERATION WITH A/P WARN ARM AND TRIP COMMON AT +27 VDC, CONNECT A TO D, B TO E, C TO F.
6. NONSTANDARD ABBREVIATION:
   A/P - AUTOPILOT
   MDA - MINIMUM DECISION ALTITUDE

Figure 7-1. 980N-1 Altimeter Test Set, Schematic Diagram

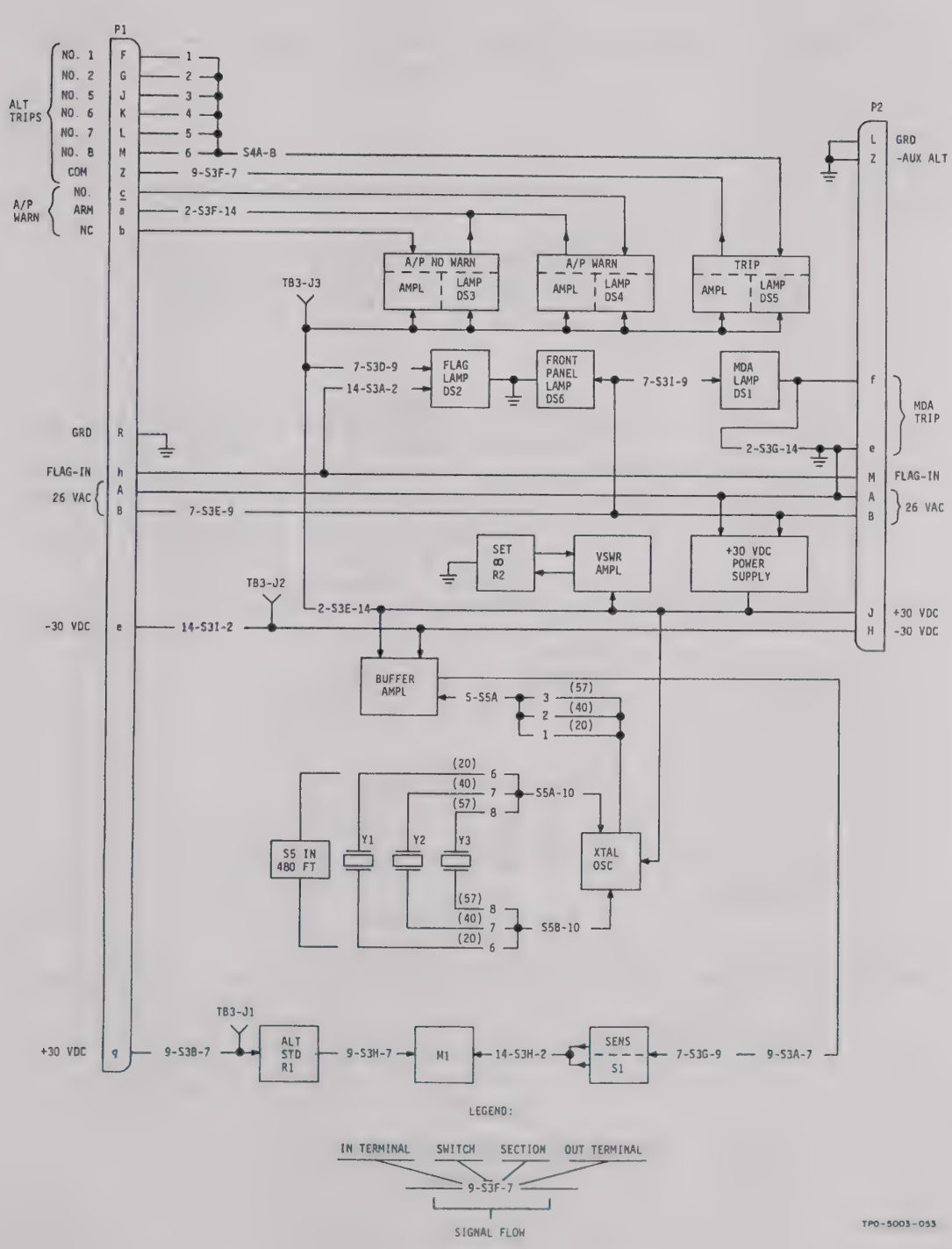


Figure 7-2. 980N-1 Altimeter Test Set, Functional Block Diagram of Circuits Connected in 980N-1 SELF TEST

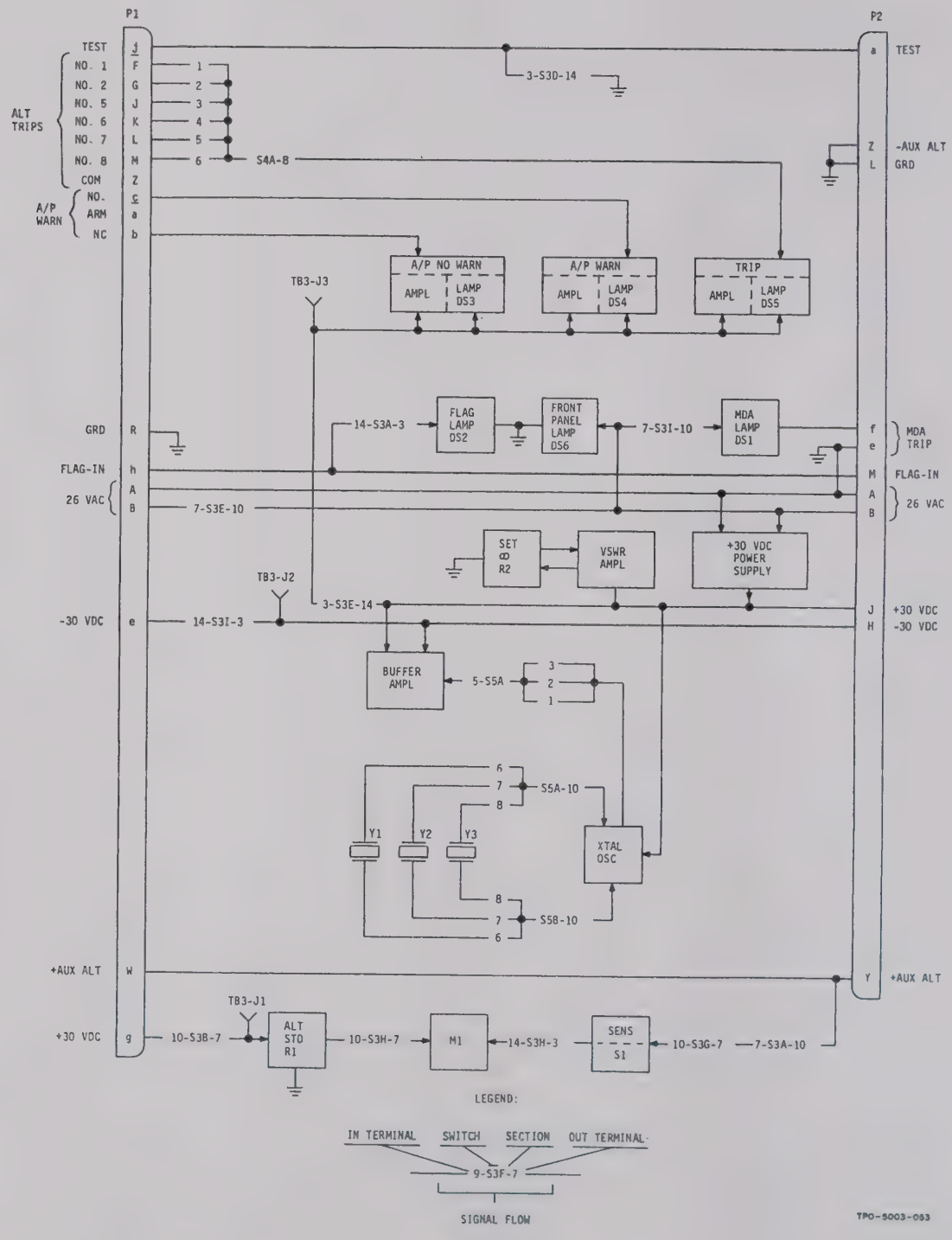


Figure 7-3. 980N-1 Altimeter Test Set, Functional Block Diagram of Circuits Connected in AL-101 SELF TEST

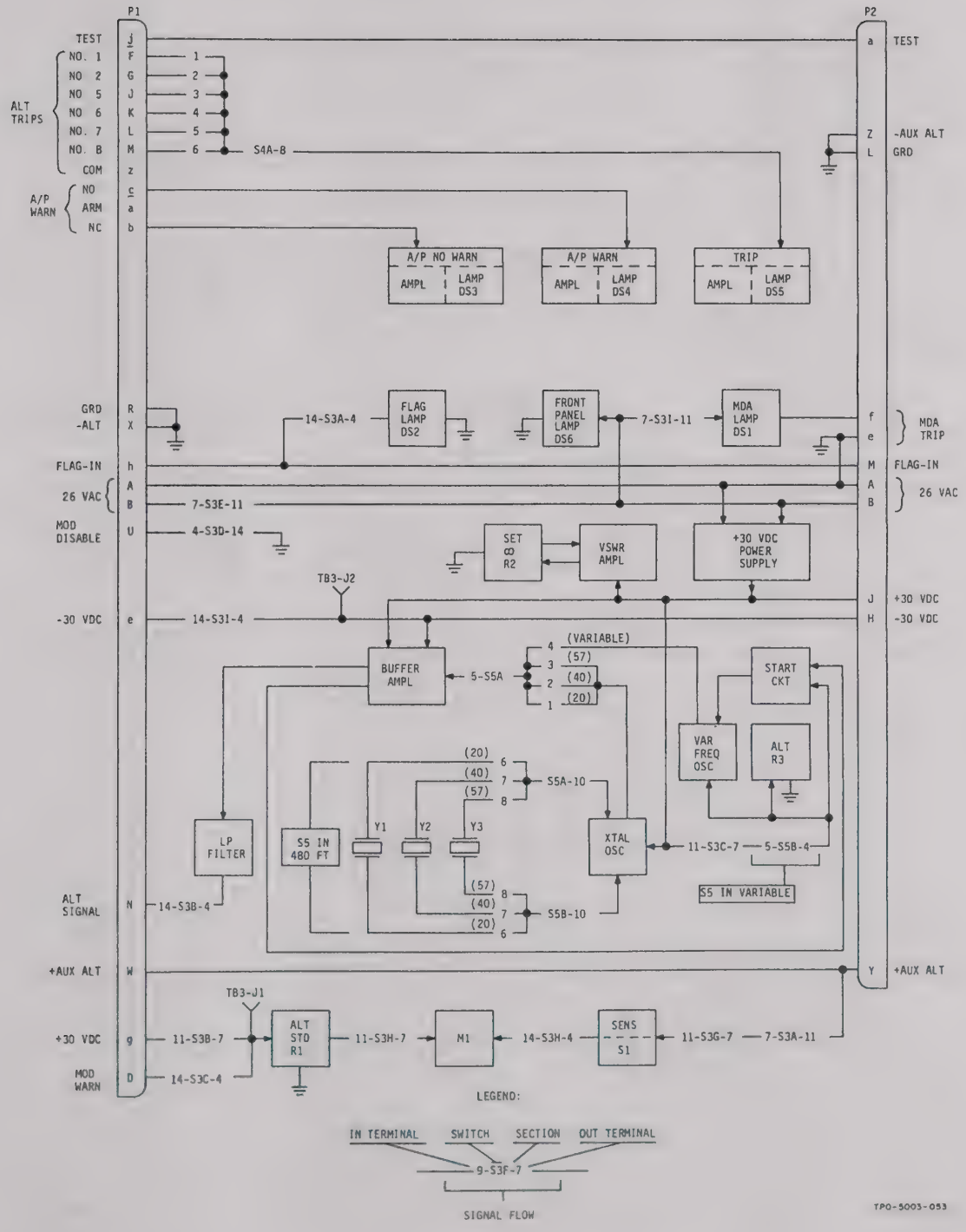


Figure 7-4. 980N-1 Altimeter Test Set, Functional Block Diagram of Circuits Connected in AUX/IND ALTITUDE Test

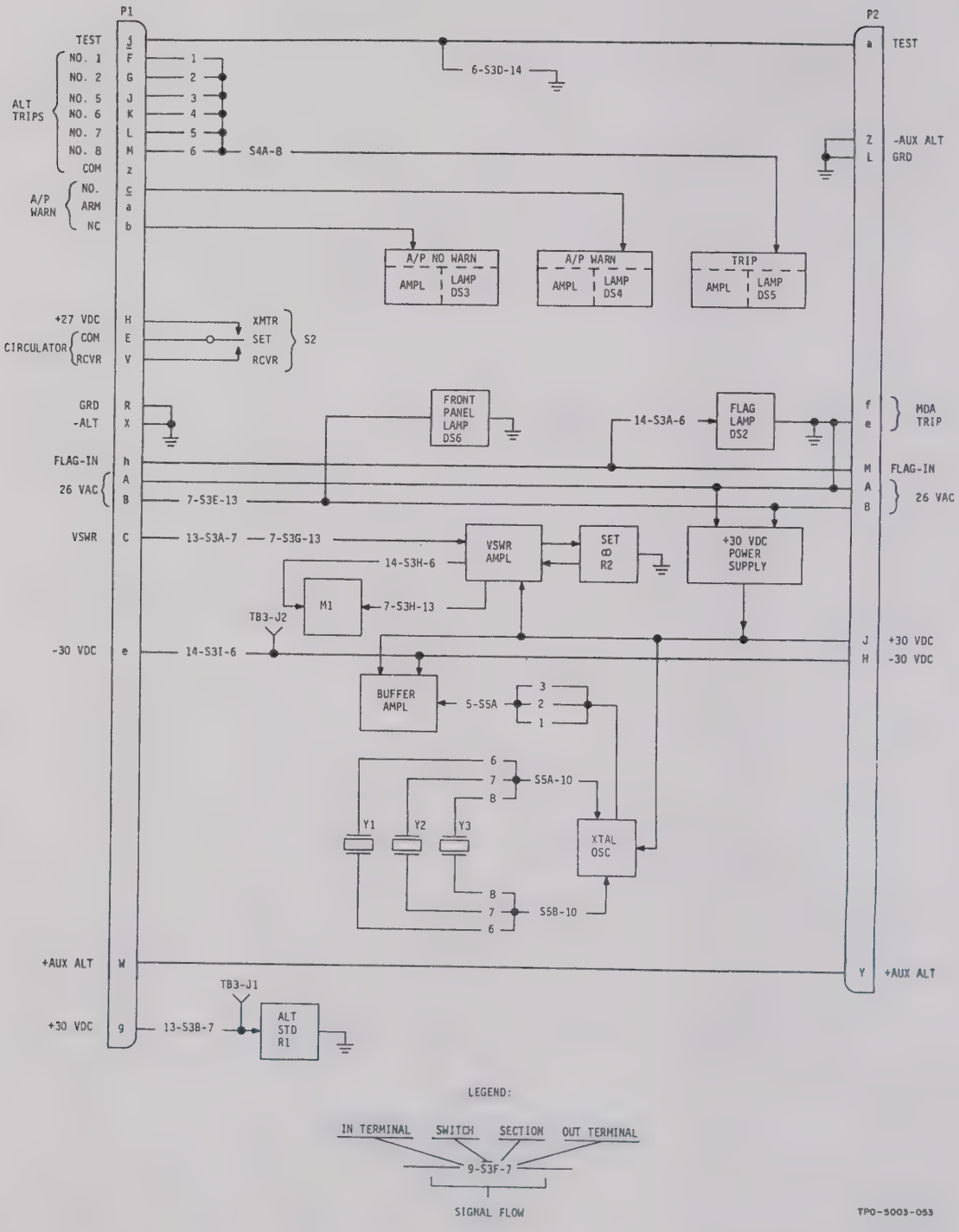


Figure 7-5. 980N-1 Altimeter Test Set, Functional Block Diagram of Circuits Connected in A/P ALTITUDE AND TRIPS Test

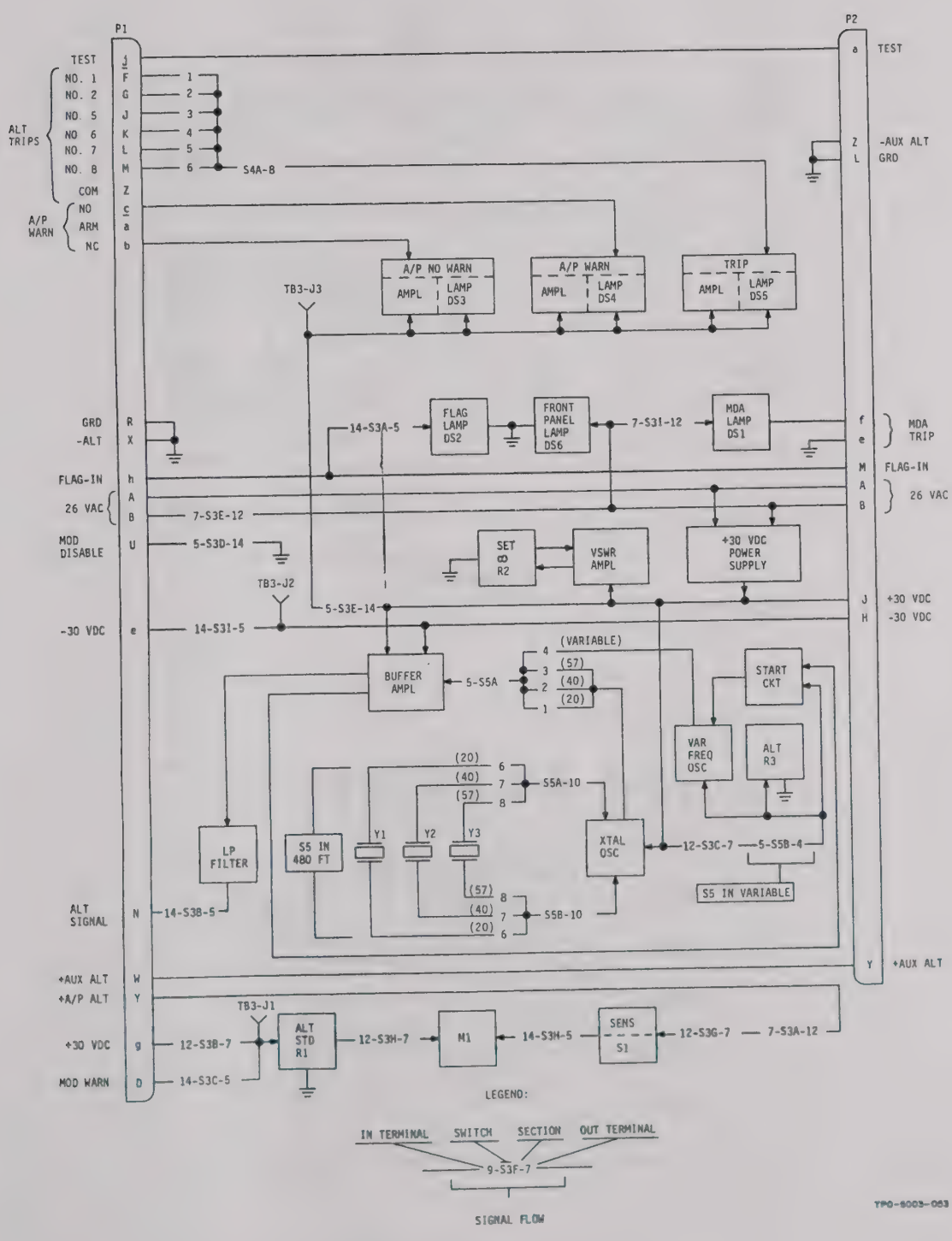


Figure 7-6. 980N-1 Altimeter Test Set, Functional Block Diagram of Circuits Connected in VSWR Test

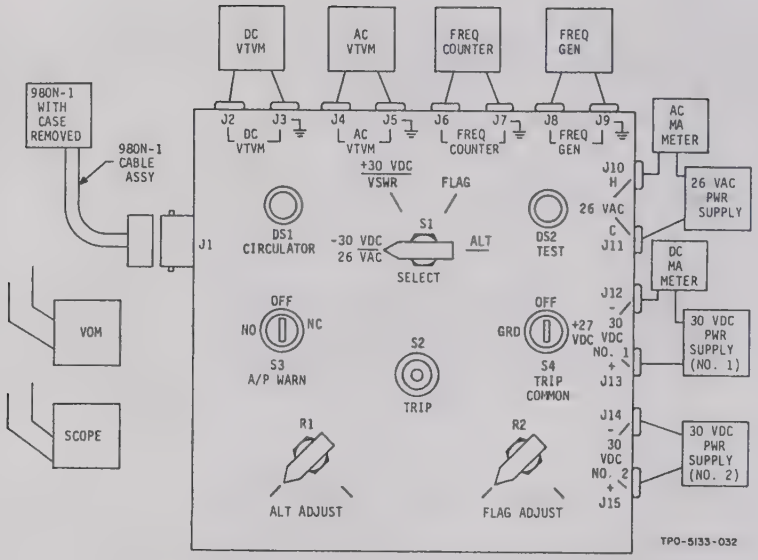


Figure 7-7. 980N-1 Test Adapter, Panel Top View and Test Setup

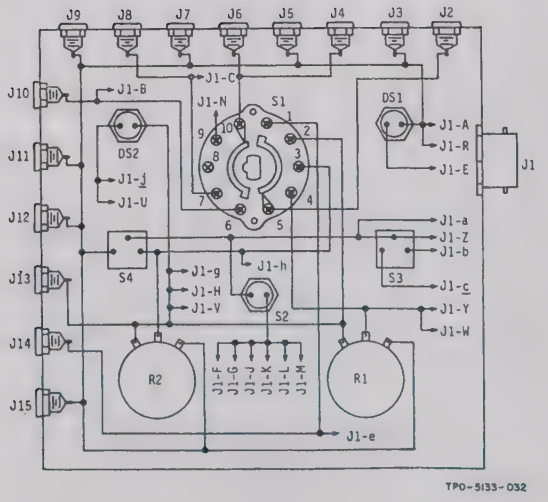


Figure 7-8. 980N-1 Test Adapter, Panel Bottom View (Wired)

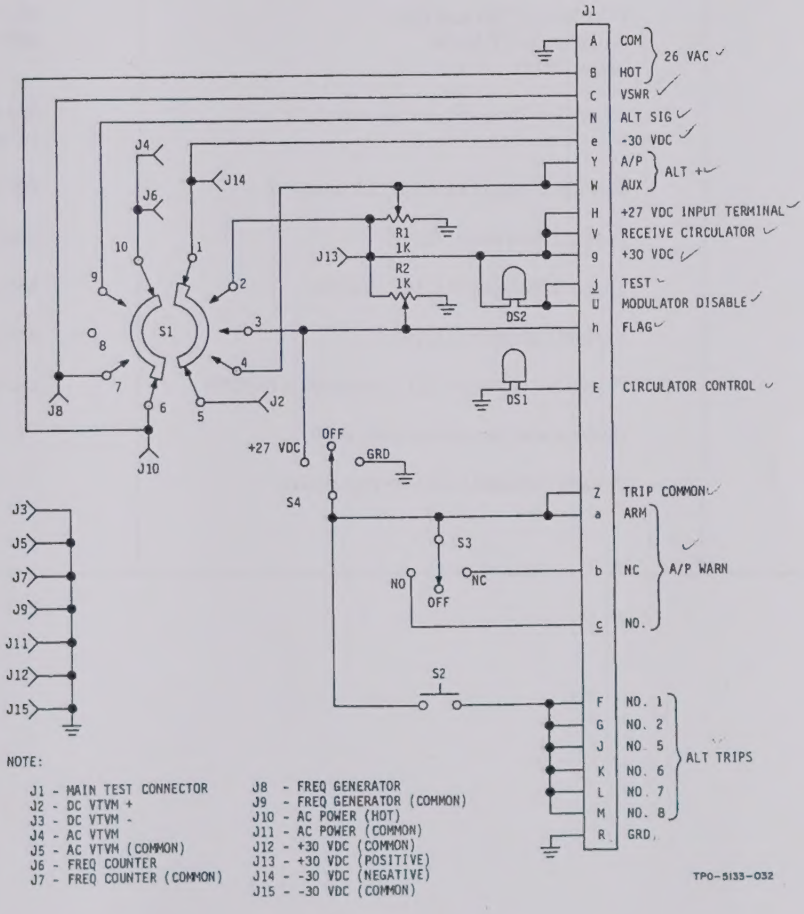
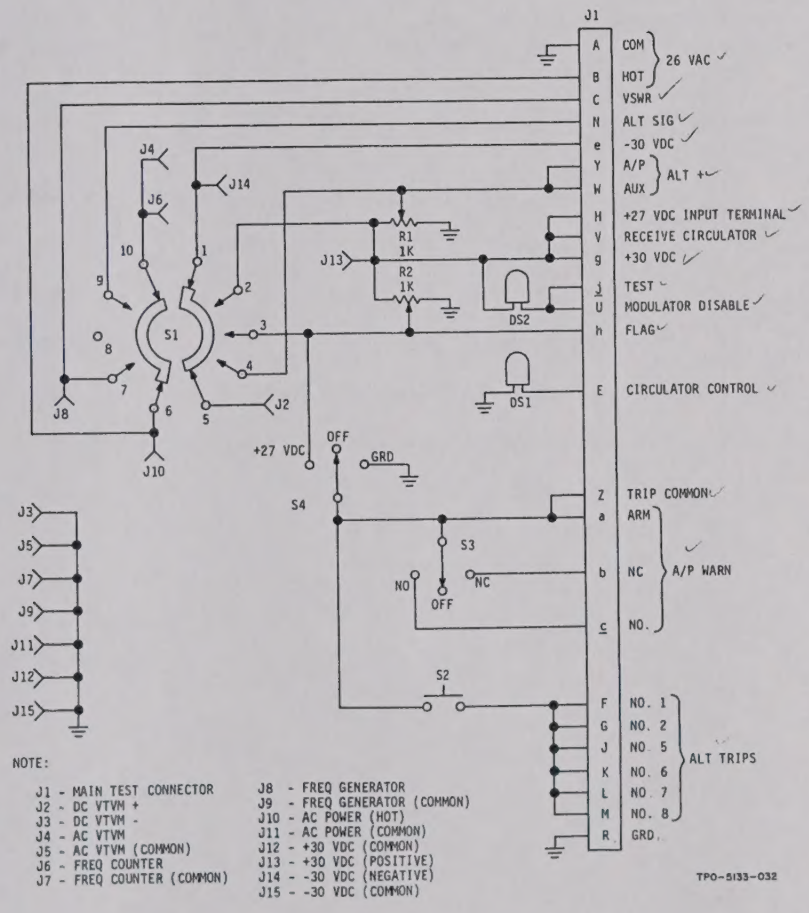


Figure 7-9. 980N-1 Test Adapter, Schematic Diagram

Table 7-1. 980N-1 Test Adapter, Parts List

QUANTITY	DESCRIPTION	COLLINS PART NUMBER
14	Tip jacks, for use with 0.080-inch-diameter test probes (J2 through J15)	360-0149-00 (white - other colors available)
2	Pilot lamps (DS1 and DS2) Lampholder (T-3-1/4) Lamp (1819)	262-0913-00 262-1863-00
1	4-position, 2-circuit, wafer switch, S1	259-8000-130 (adjustable stop)
2	3-position toggle switches, S3 and S4	259-9031-00
1	Pushbutton switch, S2, NO	260-2709-00
1	Variable resistor, R1, 10K, Helipot	381-1735-010
1	Variable resistor, R1, 10K	376-2488-00
1	P1 mating connector, J1, type BT02-A18-32SH	371-2587-010
AR	Hookup wire (any convenient size)	
AR	Chassis material (any convenient size)	



NOTE:

J1 - MAIN TEST CONNECTOR
J2 - DC VTVM +
J3 - DC VTVM -
J4 - AC VTVM
J5 - AC VTVM (COMMON)
J6 - FREQ COUNTER
J7 - FREQ COUNTER (COMMON)
J8 - FREQ GENERATOR
J9 - FREQ GENERATOR (COMMON)
J10 - AC POWER (HOT)
J11 - AC POWER (COMMON)
J12 - +30 VDC (COMMON)
J13 - +30 VDC (POSITIVE)
J14 - -30 VDC (NEGATIVE)
J15 - -30 VDC (COMMON)

Figure 7-9. 980N-1 Test Adapter, Schematic Diagram

Table 7-1. 980N-1 Test Adapter, Parts List

QUANTITY	DESCRIPTION	COLLINS PART NUMBER
14	Tip jacks, for use with 0.080-inch-diameter test probes (J2 through J15)	360-0149-00 (white - other colors available)
2	Pilot lamps (DS1 and DS2) Lampholder (T-3-1/4) Lamp (1819)	262-0913-00 262-1863-00
1	4-position, 2-circuit, wafer switch, S1	259-8000-130 (adjustable stop)
2	3-position toggle switches, S3 and S4	259-9031-00
1	Pushbutton switch, S2, NO	260-2709-00
1	Variable resistor, R1, 10K, Helipot	381-1735-010
1	Variable resistor, R1, 10K	376-2488-00
1	P1 mating connector, J1, type BT02-A18-32SH	371-2587-010
AR	Hookup wire (any convenient size)	
AR	Chassis material (any convenient size)	

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